Australian Government

Department of Education, Employment and Workplace Relations

CPCSFS5003A Develop plans and methodology for fire systems design projects

Release: 1

CPCSFS5003A Develop plans and methodology for fire systems design projects

Modification History

Not Applicable

Unit Descriptor

Unit descriptor	This unit of competency specifies the outcomes required to ensure a quality result for the detailed design of fire systems through meticulous work organisation, planning and methodology. 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.

Application of the Unit

Application of the unit	This unit of competency supports the role of fire systems' designers who manage their own work and take responsibility for ensuring that detailed designs of fire systems are produced within required timeframes and to the standards required for approval of such designs. 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.

Licensing/Regulatory Information

Refer to Unit Descriptor

Pre-Requisites

Prerequisite units	Nil

Employability Skills Information

Employability skills	This unit contains employability skills.

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. Establish relevant project management details.	1.1. *Project management roles*, responsibilities and lines of communication for *fire systems* design projects are identified and agreed with project team members in line with project timelines. 1.2. Relevant project scheduling and sequencing information is identified and confirmed. 1.3. Project file-sharing and communication systems and tools are identified and any necessary familiarisation activities are undertaken to ensure efficient and effective operation.
2. Establish procedures for initiating fire systems design projects.	2.1. Project and file-naming systems are established according to workplace and project requirements. 2.2. Efficient and effective document filing and storage systems are established according to workplace and project requirements. 2.3. Systems for efficient tracking and filing of project communications are established according to workplace and project requirements. 2.4. A system is established for ensuring that relevant *project documentation* is requested, received, named and filed according to workplace procedures.
3. Develop a plan for setting up fire systems design projects.	3.1. Procedures for setting up correct CAD backgrounds are established according to workplace and project requirements. 3.2. Systematic processes for identifying and importing the correct layer drawings into CAD are established according to workplace and project requirements. 3.3. Systematic processes for naming, notating and filing drawings are established according to workplace and project requirements.
4. Develop a plan and methodology for designing fire systems.	4.1. Steps and timeframes in the design process for fire systems are established according to workplace and project requirements. 4.2. Workplace quality assurance checks to ensure accuracy and validity of design are determined and procedures are established to ensure that these are conducted. 4.3. Stages where *regulatory or other approval* is required for the design are determined and procedures are established to ensure that these are obtained.
5. Develop a plan and	5.1. Steps and timeframes in the fabrication support

ELEMENT	PERFORMANCE CRITERIA
methodology for finalising fire systems design projects.	process are established according to workplace and project requirements. 5.2. Steps and timeframes in the installation support process are established according to workplace and project requirements. 5.3. *Final drawing and documentation requirements* are established according to workplace and project requirements.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE
This section describes the skills and knowledge required for this unit.
Required skills
- accurate naming and filing of drawings, including: - formal document control   - formal amendments, including: - history   - transmittal notices   - editing and creating drawings, including: - layout   - section   - detail   - external references   - freezing layers   - operating computer software packages and systems, including: - word processing   - spreadsheet   - email   - internet   - proprietary project management software   - numeracy skills for calculating timeframes   - language and literacy skills for: - listening to and communicating clearly with colleagues and contractors   - participating in meetings, such as negotiations with fire engineering consultant, architect, builder or other service contractors

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REQUIRED SKILLS AND KNOWLEDGE

- reading and interpreting drawings, plans and specifications, including:
- architectural
- structural
- mechanical
- hydraulic
- electrical
- developing constructive and cooperative working relationships with project team members, workplace colleagues, suppliers, installers, fitters and clients
- project management
- organising own work, including creating personal systems and checklists for planning, managing and checking work
- lateral thinking and problem solving

Required knowledge

- workplace design tools and processes
- level of accuracy required in detailed design drawings
- naming conventions for design drawings and drawing register
- computer software functions and operation, including:
    - word processing
    - spreadsheet
    - email
    - internet
    - proprietary project management software
- 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:

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REQUIRED SKILLS AND KNOWLEDGE
- layout   - special products and hazards   - 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 performance where penetrations are necessitated by the fire systems design   - basic principles of structural engineering   - characteristics of building materials   - construction industry terminology   - roles and responsibilities of relevant building project personnel, including: - 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   - contractual processes

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 development of a project plan and

EVIDENCE GUIDE	
	methodology for several different types of fire systems design projects. This should include the establishment of team member responsibilities, administrative and communications procedures, document management, scheduling, timelines and arrangements for project finalisation activities.

EVIDENCE GUIDE	

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:
	
	• an understanding of the roles of project team members
	• appropriate consultation and negotiation with project team members, including lead contractor, architect and other services' designers and installation contractors
	• an understanding of project management processes and the ability to use project management tools effectively for scheduling, communications and file sharing
	• the ability to plan, organise and conduct fire systems design activities, including installation support and finalisation in line with project timelines, and compliance and quality requirements for a range of fire systems design projects, 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: • project documentation, including plans, schedules, design briefs 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

EVIDENCE GUIDE	
	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.

EVIDENCE GUIDE	
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.	
Project management roles may include:	• client • lead contractor or builder • fire engineering consultant • architect • mechanical engineer or contractor • structural engineer or contractor • electrical engineer or contractor • hydraulic engineer or contractor.

Fire systems may include:	• 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
	• detection and warning systems, including:
	    • emergency warning and intercommunications systems (EWIS)

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RANGE STATEMENT

	• fire detection and alarm systems • smoke control systems • emergency lighting systems.

Project documentation may include:	• drawings, including:
	  • architectural
	  • structural
	  • mechanical
	  • hydraulic
	  • electrical
	  • layout
	  • section
	  • detail
	  • external references
	• project plan
	• project schedule
	• design brief
	• design specifications.

Regulatory or other approval may include sign-off by:	• building surveyor • fire brigade • fire engineer.
Final drawing and documentation requirements may include:	• 'as installed' drawings • block plans • tactical fire plans • commissioning benchmarks • operations and maintenance manuals.

Unit Sector(s)

Unit sector	Fire systems design

Co-requisite units

Co-requisite units	Nil

Competency field

Competency field	

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