Australian Government

CPCPRF3022A Fabricate and install roof drainage components

Release 1

INDUSTRY SKILLS COUNCILS
Creating Australia's Future

CPCPRF3022A Fabricate and install roof drainage components

Modification History

Prerequisite unit changed
Minor changes throughout the unit
Not equivalent to CPCPRF3012A

Unit Descriptor

This unit of competency specifies the outcomes required to fabricate and install roof drainage components and rainwater goods for commercial and residential roof systems.

Application of the Unit

Site location for work application may be either domestic or commercial and may be a new work site or an existing structure being renovated, extended, restored or maintained.

Licensing/Regulatory Information

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

Pre-Requisites

CPCPCM2043A Carry out WHS requirements

Employability Skills Information

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 required performance needed to demonstrate achievement of the element. Where ***bold italicised*** text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	**Prepare for work.**	1.1	Plans and specifications are obtained and confirmed by site inspection.
		1.2	***Work health and safety*** (WHS) and ***environmental requirements*** associated with fabricating and installing roof drainage components are adhered to throughout the work.
		1.3	***Quality assurance requirements*** are identified and adhered to according to workplace requirements.
		1.4	Tasks are planned and sequenced in conjunction with others involved in or affected by the work and ***statutory and regulatory authorities'*** requirements.
		1.5	***Tools and equipment***, including personal protective equipment, are selected and checked for serviceability.
		1.6	Work area is prepared to support the fabrication and installation of roof drainage components.
2	**Identify installation requirements.**	2.1	Rainwater management system is identified as suitable for preventing rainwater penetration into building structure.
		2.2	***Roof drainage components*** required for installation are identified from drawings and specifications.
		2.3	***Fabrication patterns*** are drawn based on design and freehand sketch of roof drainage.
		2.4	Quantity, type and sizing of drainage components, rainwater materials and accessories required are calculated from drawings and specifications in compliance with relevant Australian standards, local authorities' requirements and relevant ***information***.
		2.5	Box gutter support system is fabricated according to relevant Australian standard.
		2.6	***Materials*** are identified from drawings, specifications, patterns and/or calculations and ordered and collected according to workplace procedures.
		2.7	Materials and equipment are checked for compliance

			with docket and order form and for acceptable condition, and ***faults are reported***.
3	**Fabricate roof drainage components.**	3.1	Method of fabrication, tools and machinery requirements are determined to suit job requirements.
		3.2	Materials are marked out from drawings to fabricate roof drainage components.
		3.3	Roof drainage components are fabricated in compliance with relevant Australian standards, drawings, specifications and site measurements.
		3.4	Components are marked, packaged and prepared for delivery and installation according to workplace procedures.
4	**Set out and install roof drainage components.**	4.1	Components are checked for compliance with docket and order form and for acceptable condition, and arranged in order of installation.
		4.2	Roof drainage components are set out to comply with job specifications and site measurements.
		4.3	Structural supports are installed in compliance with job specifications.
		4.4	Roof drainage components are jointed in compliance with job specifications and relevant Australian standards.
		4.5	Roof drainage system is installed according to relevant Australian standards and job specifications.
		4.6	***Sustainability principles and concepts*** are applied throughout the installation.
		4.7	System is performance tested for satisfactory installation and remedied.
5	**Clean up.**	5.1	Work area is cleared and materials disposed of, reused or recycled according to legislation, regulations, codes of practice and job specification.
		5.2	Tools and equipment are cleaned, checked, maintained and stored according to manufacturer recommendations

and workplace procedures.

5.3 Documentation is completed according to workplace requirements.

Required Skills and Knowledge

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

Required skills

- communication skills to:
  - access information
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- initiative and enterprise skills to identify and accurately report to appropriate personnel any faults in tools, equipment or materials
- literacy skills to:
  - complete workplace documentation
  - read and interpret:
    - documentation from a variety of sources
    - plans and specifications
- numeracy skills to apply measurements and calculations
- planning and organising skills to:
  - plan and sequence tasks with others
  - plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technical skills to select, fabricate, joint and install gutter and downpipe systems to effectively drain a roof to an authorised discharge point
- technology skills to:
  - access and understand site-specific instructions in a variety of media
  - use mobile communication technology

Required knowledge

- capacity of fabrication machinery involved in the production of roof drainage components
- capillary action, thermal expansion and fabrication techniques to prevent leaking installations
- characteristics of various metals and finishes
- corrosion prevention treatment requirements of cut sheets

- design concepts and performance measures for roof drainage components
- electrolysis and problems associated with the use of dissimilar metals
- job safety analysis (JSA) and safe work method statements (SWMS)
- joining of materials
- processes of fabricating, jointing and fixing roof drainage components
- relevant WHS regulations and fall protection codes and requirements
- relevant statutory requirements related to fabricating and installing roof drainage components
- SI system of measurement
- types of fasteners, fixings and sealants and their application to the fabrication and installation of roof coverings

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 providing that simulated or project-based assessment techniques fully replicate plumbing and services workplace conditions, materials, activities, responsibilities and procedures.

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:

- locating, interpreting and applying relevant information, relevant Australian standards and specifications to the fabrication and installation of roof drainage components
- applying safety requirements throughout the work sequence, including electrical safety requirements and the use of personal protective clothing and equipment
- given the plans and specifications of a roof-management system for a roofed area of at least 4 square metres, determining the requirements, selecting, fabricating and installing:
  - valley gutter
  - box gutter, to include a sump or rainhead and overflow
  - eaves gutter and downpipe system, complete with gutter supports, expansion joints and caps
- ensuring:
  - application of sustainability principles and concepts throughout the installation
  - correct identification of requirements and details of proposed installation
  - correct fit of the completed installation
  - correct selection and use of appropriate processes, tools and equipment
  - completing all work to specification
  - compliance with regulations, relevant Australian standards and organisational quality procedures and processes

- communicating and working effectively and safely with others.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the minimum task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe working practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry-related systems information.

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.

Method of assessment

Assessment methods 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.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

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.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

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.

Work health and safety is to be according to commonwealth, state and territory legislation and regulations and may include:

- handling of materials
- hazard control
- personal protective clothing and equipment prescribed under legislation, regulations and workplace policies and practices
- safe operating procedures, including recognising and preventing hazards associated with:
  - electricity
  - hazardous materials and substances

- service lines
- surrounding structures and facilities
- trip hazards
- use of tools and equipment
- work site visitors and the public
- working at heights
- working in proximity to others
- use of firefighting equipment
- use of first aid equipment
- workplace environment and safety.

Environmental requirements cover water quality management and may include:

- clean-up protection
- stormwater protection
- waste management.

Quality assurance requirements may include:

- environment policy
- Environment Protection Authority (EPA)
- internal company quality assurance policy and risk management strategy
- International Standards Organisation
- site safety plan
- workplace operations and procedures.

Statutory and regulatory authorities include:

- commonwealth, state or territory, and local authorities administering applicable Acts, regulations and codes of practice.

Tools and equipment may include:

- drawing equipment
- fall protection equipment
- hand and power tools
- ladders
- lifting and load shifting equipment, including:
  - chain blocks
  - cranes
  - elevated work platforms
  - forklifts
  - hand trolleys
  - hoists and jacks
  - restricted height scaffolds

- rollers
- measuring equipment.

Roof drainage components may include:

- box gutters
- downpipes
- eaves gutters
- gutter support system
- parapet gutters
- rainwater heads
- siphonic drainage downpipe systems and materials
- standing overflows
- sumps
- valley gutters.

Fabrication patterns may be:

- actual size or scaled.

Information may include:

- charts and hand drawings
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions
- material safety data sheets (MSDS)
- memos
- organisation work specifications and requirements
- plans and sketches
- regulatory and legislative requirements, particularly those pertaining to:
  - building codes
  - WHS and environmental requirements
  - plumbing regulations
- relevant Australian standards
- safe work procedures relating to fabricating and installing roof drainage components
- signage
- verbal, written and graphical instructions
- work bulletins
- work schedules, plans and specifications.

Materials for fabricating and installing roof drainage components

- fibreglass
- laminate
- metal gutter and structural supports

may include:	• metal rainwater goods • metal roof covers of concealed or pierce fixed types • metal self drilling and tapping screws • plastic building sheets for walls and roofs • polyethylene • PVC sheet goods • rivets and sealants • thermal insulation of reflective foil • roof tiles.
Fault reporting:	• may be written or verbal • is to be according to company's workplace procedures.

Sustainability principles and concepts:	• cover the current and future social, economic and environmental use of resources
	• may include:
	  • rainwater harvesting
	  • efficient energy use
	  • efficient use and recycling of material
	  • correct handling of hazardous materials
	  • disposing of waste material to ensure minimal environmental impact
	  • selecting appropriate components to ensure minimal environmental impact.

Unit Sector(s)

Functional area

Unit sector Plumbing and services

Custom Content Section

Not applicable.