Australian Government

Department of Education, Employment and Workplace Relations

CPCCWP3001A Apply waterproofing process to below ground level wet areas

Release: 1

CPCCWP3001A Apply waterproofing process to below ground level wet areas

Modification History

Not Applicable

Unit Descriptor

Unit descriptor This unit of competency specifies the outcomes required to apply waterproofing practices and principles to wet areas below ground level.
It includes identification of the waterproofing system to be used, its preparation and its application.

Application of the Unit

Application of the unit This unit of competency supports the attainment of skills and knowledge to apply waterproofing process to below ground level wet areas while working with others and in teams.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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.

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions and operational details are obtained using relevant ***information***, confirmed and applied for ***planning and preparation*** purposes. 1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies. 1.3. Signage and barricade requirements are identified and implemented. 1.4. ***Tools and equipment*** selected to carry out tasks are consistent with the requirements of the job, checked for serviceability and any faults are rectified or reported prior to commencement. 1.5. Material quantity requirements are calculated in accordance with plans and specifications and ***quality requirements***. 1.6. ***Materials*** appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use. 1.7. ***Environmental requirements*** are identified for the project in accordance with environmental plans and regulatory obligations and applied.
2. Identify waterproofing system.	2.1. ***Below ground*** area to be waterproofed is identified from job drawings and specifications or diagnosed for damp fault area. 2.2. Area is ***inspected*** for ***structural*** and surface defects in accordance with job and manufacturer specifications. 2.3. Appropriate ***waterproofing systems*** and products are identified, analysed and selected for ***water exclusion*** in accordance with job and manufacturer specifications and with material safety data sheet (MSDS) directions. 2.4. Range of waterproofing materials is checked for product suitability, conformity to specification and compatibility with surface material, preparation and waterproofing installation technique. 2.5. Type of waterproofing material is identified in accordance with job specification, state of structure and job safety requirements of MSDS directions.
3. Prepare for waterproofing installation.	3.1. Below ground wet area site set out, building alignment and finished levels are checked to conform with specified location, structure and dimensions in accordance with drawings and specifications. 3.2. Moisture content in substrate is identified. 3.3. Appropriateness of the system of waterproofing

ELEMENT	PERFORMANCE CRITERIA
	selected for the structure or work is confirmed. 3.4. Below ground wet area site levels are checked for conformity to drawings and specifications. 3.5. Requirement for shoring of the work site is identified and arranged. 3.6. Access to installation area is assessed for adequacy and safety to allow for the installation over the full surface of the work area. 3.7. Provision for drainage is identified and confirmed with supervisor or hydraulic consultant as being appropriate for the installation. 3.8. Existing flashings, new flashings and termination seals are prepared to job requirements and made ready for placement and fixing to job and manufacturer specifications. 3.9. Waterproofing material, quantity and product type are confirmed as conforming to job specification, state of structure and job safety requirements, and MSDS direction. 3.10. ***Substrate*** is prepared to a smooth and uniform finish with fillets and falls fitted in accordance with manufacturers' instructions and good building practices. 3.11. Surface of structure to be waterproofed is prepared and primed ready for waterproofing application in accordance with job specification and manufacturers' specifications and recommendations.

ELEMENT	PERFORMANCE CRITERIA
4. Apply waterproofing.	4.1. Waterproofing system is applied to primed surface of structure to correct thickness and in accordance with manufacturers' job specification. 4.2. Bond breaker/fillets are installed in accordance with manufacturer specifications. 4.3. Waterproofing material/system is installed using methods and materials consistent with manufacturers' specifications. 4.4. Termination seals are installed using methods and materials consistent with manufacturers' specifications. 4.5. Completed below ground waterproofing installation is checked for conformity to manufacturer specifications. 4.6. Waterproofing material/system is protected and drained using methods and materials consistent with manufacturers' specifications and good building practice. 4.7. Final inspection of site is undertaken and sign-off and handover of work is carried out in accordance with workplace requirements.
5. Clean up.	5.1. Work area is cleared and materials disposed of, reused or recycled in accordance with legislation, regulations, codes of practice and job specification. 5.2. Plant, tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturer recommendations and standard work practices.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

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

Required skills

Required skills for this unit are:

- communication skills to:
  - follow instructions
  - read and interpret:
    - documentation from a variety of sources

REQUIRED SKILLS AND KNOWLEDGE

    - drawings and specifications
  - recognise procedures
  - report faults
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
  - written skills to record results of checks and tests and relevant work completion procedures
- evaluate own actions and make judgments about performance and necessary improvements
- identifying and accurately reporting to appropriate personnel any faults in tools, equipment or materials
- organisational skills, including the ability to plan and set out work
- respond to change and contribute to workplace responsibilities, such as current work site environmental and sustainability frameworks and management systems
- 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
- technological skills to:
  - use a range of mobile technology, such as two-way radio and mobile phones
  - voice and hand signals to access and understand site-specific instructions.

Required knowledge

Required knowledge for this unit is:

- below ground level waterproofing materials, processes and techniques
- characteristics and applications of waterproofing materials and adhesives
- construction systems and waterproofing considerations
- general construction terminology
- job safety analysis (JSA) and safe work method statements
- MSDS
- materials storage and environmentally friendly waste management
- plans, drawings and specifications
- plant, tools and equipment types, characteristics, uses and limitations
- principles and considerations of water exclusion
- processes for the calculation of material requirements
- quality requirements
- shoring techniques and requirements
- termination and overflashing detailing
- workplace and equipment safety requirements.

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 simulated or project-based assessment techniques fully replicate construction 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 the ability to:

- locate, interpret and apply relevant information, standards and specifications
- comply with site safety plan and OHS legislation, regulations and codes of practice applicable to workplace operations
- comply with organisational policies and procedures including quality requirements
- safely and effectively operate and use tools, plant and equipment
- communicate and work effectively and safely with others
- as a minimum waterproof a basement wall excavated in a clay work site, with:
    - the wall of masonry block and with a concrete column at mid span
    - the wall and column supported on a strip concrete footing
    - a cavity wall above the block wall
    - the site is to be backfilled and access to the bottom edge of the footing currently not available
    - the appropriate root resistant waterproofing material selected
    - drainage and protection of the waterproofing provided
    - ensuring:
        - correct identification of requirement and installation of the waterproofing system

EVIDENCE GUIDE

	• correct selection and use of appropriate processes, tools and equipment • completing all work to specification • proposed termination detailing.
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: • workplace location or simulated workplace • materials relevant to waterproofing below ground level wet areas • hand and power tools, plant and equipment appropriate to waterproofing below ground level wet areas • realistic activities covering the mandatory task requirements • specifications and work instructions. Assessment of this unit of competency may be in conjunction with assessment of other units commonly performed at the same time in normal job roles. 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

EVIDENCE GUIDE

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

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.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions,

RANGE STATEMENT

	where specified • MSDS • memos • regulatory and legislative requirements pertaining waterproofing below ground level wet areas • relevant Australian standards • safe work procedures relating to waterproofing below ground level wet areas • signage • verbal, written and graphical instructions • work bulletins • work schedules, plans and specifications.

RANGE STATEMENT

Planning and preparation include:	• assessment of conditions and hazards • determination of work requirements and safety plans and policies • equipment defect identification • work site inspection.

Safety (***OHS***) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:	• emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
	• handling activities that may require the assistance of others or the use of manual or mechanical lifting devices where size, weight or other issues, such as a disability are a factor
	• hazard control
	• hazardous materials and substances, including cement and curing agents
	• organisational first aid
	• PPE prescribed under legislation, regulations and workplace policies and practices
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • earth leakage boxes
	  • lighting
	  • power cables, including overhead service trays, cables and conduits
	  • restricted access barriers
	  • surrounding structures
	  • traffic control
	  • trip hazards
	  • work site visitors and the public
	  • working at heights
	  • working in confined spaces
	  • working in proximity to others
	• use of firefighting equipment
	• use of tools and equipment
	• workplace environmental requirements and safety.

Tools and equipment include:	• angle grinders • brooms • brushes • buckets

RANGE STATEMENT

- caulking guns
- chisels, including cold chisels
- cutting blades
- dumpy, laser and water levels
- electric drills and screwdrivers
- electric hammers
- excavating equipment
- extension leads
- gas burners and torches
- hammers
- high pressure water equipment
- measuring tapes and rules
- mixers and mixing apparatus
- moisture meters
- pumps
- rollers
- scissors
- shoring equipment
- spirit levels
- straight edges
- trowels
- vacuum cleaners
- wood floats.

RANGE STATEMENT

Quality requirements include relevant regulations, including:	• Australian standards • internal company quality policy and standards • manufacturer specifications • workplace operations and procedures.

Waterproofing ***materials*** include:	• adhesives
	• drainage cells
	• drainage piping
	• for below ground application, which may be:
	  • liquid applied, including:
	  • acrylic
	  • bituminous
	  • cementitious-based
	  • injection
	  • polyurethane
	  • sheet, including:
	  • bentonite composites
	  • butanol
	  • ethylene cop bitumen (ECB)
	  • ethylene propylene diene monomer rubber (EPDM)
	  • polyvinyl chloride (PVC)
	• waterproofing materials, including:
	  • geotech fabric
	  • protection board
	  • substrate primer.

Environmental requirements include:	• clean-up management • dust and noise • vibration • waste management.
Below ground applications include:	• external and internal vertical walls constructed below ground level and under slab waterproofing barriers • foundation work • lift pits • pools and ponds • retaining walls • retention tanks • stair wells • tanks

RANGE STATEMENT

- water storage areas
- underground residential and commercial spaces, such as:
  - basements
  - car parks
  - storage areas.

RANGE STATEMENT

Inspection and identification of the waterproofing system include:	• preparation of the substrate and waterproofing material
	• application to a below ground level wet area
	• the process:
	  • testing
	  • drainage
	  • protection of the membrane system and flashings.

Structural considerations include:	• below ground environmental factors, including:
	  • water run-off and impact on adjoining property
	  • allowing water flow
	  • slope, fall and grade of surfaces
	• design principles
	• drainage requirements
	• hydrostatic pressures
	• structural movement
	• substrate type and condition
	• waterproofing protection.

Waterproofing systems include:	• below ground waterproofing material should be:
	  • cement-based waterproofing systems
	  • liquid sealants or sealant devices
	  • not subject to biological attack
	  • root resistant
	• sheet and sprayed material membranes.

Considerations in ***water exclusion*** include:	• capillary action
	• causes of water penetration, including:
	  • leakage through wall and floor finishes
	  • penetration at joints and junctions
	  • movement from shrinkage
	  • accumulated drainage
	• failure of or damage to waterproofing system
	• corners and terminations
	• curing times of compounds and their applications
	• damp proof courses and flashings
	• direction of fall of substrate or decorative finish
	• hydrostatic pressure

RANGE STATEMENT

	• impact of environmental conditions
	• joining
	• perimeter treatment, including:
	  • pressure seals cross cavity and over flashing
	  • thermal shrinkage (expansion and contraction)
	• shelf life of waterproofing products
	• surface applications and protection requirements
	• use of bond-breakers
	• use of sealants
	• waste allowances.

Substrates include:	• aerated autoclaved concrete materials:
	  • Hebel
	  • Thermolite
	• blockwork
	• brickwork
	• cement render
	• ferrous and non-ferrous piping
	• fibrous cement sheeting
	• pre-cast concrete
	• PVC
	• reinforced in situ concrete
	• timber and timber-based products
	• wet area plasterboard.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area