



Australian Government

Department of Education, Employment and Workplace Relations

CPCPWT3019A Install water pipe systems

Release: 1

CPCPWT3019A Install water pipe systems

Modification History

Not Applicable

Unit Descriptor

Unit descriptor This unit of competency specifies the outcomes required to install and test water pipes larger than DN65, or large water services.

Application of the Unit

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

Not Applicable

Pre-Requisites

Prerequisite units

CPCPCM2023A

Carry out OHS requirements

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.	<p>1.1. Work instructions and relevant <i>information</i>, including plans, specifications, quality requirements and operational details relevant to the tasks, are obtained, confirmed and applied to the allotted task.</p> <p>1.2. <i>Safety (OHS)</i> requirements are obtained from the site safety plan and organisational policies and procedures, confirmed and applied to the allotted task.</p> <p>1.3. <i>Signage</i> requirements are identified and obtained from project traffic management plan and <i>traffic conditions</i> and are implemented.</p> <p>1.4. Plant, <i>tools and equipment</i> selected to carry out tasks are consistent with requirements of the job, are checked for serviceability and any faults are rectified or reported.</p> <p>1.5. <i>Environmental requirements</i> are identified from project environmental management plan, confirmed and applied to the allotted task.</p>
2. Set out and excavate.	<p>2.1. Work area and <i>materials</i> are prepared to support efficient installation of the pipe work.</p> <p>2.2. Dewatering requirements are determined and applied.</p> <p>2.3. Location, alignment direction, level and grade of mains pipe system are determined from job drawings and specifications.</p> <p>2.4. Works are set out to specification.</p> <p>2.5. Plant operator is advised of excavation requirements and levels are monitored.</p> <p>2.6. Mains pipe system support mechanism is installed in accordance with plans, specifications and standards in compliance with <i>statutory and regulatory authority</i> requirements.</p>
3. Install mains pipeline.	<p>3.1. Pipes are lowered and placed in position according to design specifications of <i>mains pipe system</i>.</p> <p>3.2. Pipes are joined in accordance with manufacturer specifications using <i>pipe joining methods</i>.</p> <p>3.3. Pipes are placed and fittings, <i>valves and flow control devices</i> are fitted in accordance with drawings, specifications and <i>installation procedures</i>.</p> <p>3.4. Alignment level and grade are checked continuously for conformance with design plans and</p>

ELEMENT	PERFORMANCE CRITERIA
4. Test mains pipe system.	<p>specifications.</p> <p>3.5. Side support or overlay is positioned beside the pipes.</p> <p>3.6. Mains pipe system support structure is checked.</p> <p>3.7. Backfill procedure is monitored to ensure work is completed to specification, where specified.</p> <p>3.8. Valve chambers</p> <p>4.1. Testing is performed to relevant authority requirements as determined by specifications.</p> <p>4.2. Mains pipe system test procedures are performed, establishing pressurisation, functionality and serviceability.</p> <p>4.3. Test results are recorded and reported.</p>
5. Clean up.	<p>5.1. Work area is cleared and materials disposed of or recycled in accordance with project environmental management plan.</p> <p>5.2. Plant, tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturer recommendations and standard work practices.</p>

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:
 - complete written records and reports of test results
 - complete other relevant workplace documentation
 - determine requirements
 - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
 - follow and give instructions
 - plan and sequence tasks with others
 - read and interpret:

REQUIRED SKILLS AND KNOWLEDGE

- drawings and specifications
- documentation from a variety of sources
- use language and concepts appropriate to cultural differences
- use and interpret non-verbal communication, such as hand signals
- identifying and accurately reporting to appropriate personnel any faults in tools, equipment or materials
- numeracy skills to apply measurements and calculations
- organisational skills, including the ability to 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
- technological skills to:
 - access and understand site-specific instructions in a variety of media
 - use mobile communication technology.

Required knowledge

Required knowledge for this unit is:

- concrete and concrete fabrication
- confined space entry requirements
- dewatering
- equipment types, characteristics, technical capabilities and limitations
- excavation and trench safety
- installation of booster systems
- installation of thrust blocks
- job safety analysis (JSA) and safe work method statement
- mains pipe systems and installation procedures
- mains water pressure
- materials safety data sheets (MSDS) and materials handling methods
- operational, maintenance and basic diagnostic procedures, including testing procedures
- plumbing industry terminology
- processes for interpreting engineering drawings
- processes for calculating pipeline grades and percentages
- project quality requirements
- sedimentation and erosion controls
- site and equipment safety requirements
- site isolation and traffic control responsibilities and authorities
- valves and flow control devices
- water reticulation.

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 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, standards and specifications
- complying with site safety plan, OHS regulations and state and territory legislation applicable to workplace operations
- complying with organisational policies and procedures, including quality requirements
- as a minimum the ability to, given the plans and specifications, install six metres of DN100 mains pressure pipe system which is to include a change of direction or tee junction
- installing a mains pipe system which, as a minimum, includes two materials and one isolation valve
- safe and effective operational use of tools, plant and equipment
- 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

EVIDENCE GUIDE

- 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

EVIDENCE GUIDE

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.

Guidance information for assessment

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 may include:

- charts and hand drawings
- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions
- MSDS
- memos
- organisation work specifications and requirements
- regulatory and legislative requirements pertaining to the installation of mains pipe systems

RANGE STATEMENT

Safety (OHS) is to be in accordance with commonwealth, state and territory legislation and regulations, organisational safety policies and procedures, and project safety plan, and may include:

- relevant Australian standards
- safe work procedures or equivalent relating to the installation of mains pipe systems
- signage
- verbal, written and graphical instructions
- work bulletins
- work schedules, plans and specifications.
- emergency procedures, which are to include:
 - emergency shutdown and stopping
 - extinguishing equipment for fires
 - organisational first aid requirements, including use of first aid equipment
 - evacuation
- 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 and risks associated with:
 - buildings
 - cuttings
 - embankments
 - excavations
 - hazardous materials and substances
 - other machines
 - personnel
 - restricted access barriers
 - structures
 - traffic control
 - trees
 - underground services
 - uneven and unstable terrain
 - work site visitors and the public
 - working in proximity to others
- safe parking practices, including ensuring:
 - access ways are clear
 - equipment and machinery are:
 - away from overhangs and refuelling

RANGE STATEMENT

- sites
 - safe distance from excavations
 - secured from unauthorised access or movement
 - use of tools and equipment
 - workplace environment and safety.
- Signage** may include:
- barricades
 - highway traffic signs
 - signage for traffic control escort vehicles
 - site safety signage
 - temporary signage for benefit of motorists and pedestrians
 - traffic conditions signage.
- Traffic conditions** may include:
- buildings
 - congested urban environments
 - low traffic rural areas
 - off-road un-trafficked areas
 - parking sites
 - pedestrian areas.
- Tools and equipment** may include:
- crow bars
 - grinders
 - hammers
 - jointing equipment
 - levelling equipment
 - lifting equipment
 - oxy-acetylene equipment
 - saws
 - scaffolding
 - shovels.
- Environmental requirements** are to include:
- clean-up management
 - dust and noise
 - organisational and project environmental management plan
 - vibration
 - waste management
 - water quality protection.
- Materials** may include:
- backfill and bedding materials
 - concrete
 - pipes
 - other approved materials.

RANGE STATEMENT

- Statutory and regulatory authorities*** include:
- federal, state and local authorities.
- Mains pipe systems:***
- may include:
 - in-ground or above ground
 - pressurised mains water pipelines (booster system)
 - may be constructed from:
 - ductile iron cement lined (DICL)
 - polymer
 - steel and copper
 - other approved materials.
- Pipe joining methods*** may include:
- arc welded and mechanical jointed
 - rubber ring
 - solvent welded
 - other approved jointing methods.
- Valves and flow control devices*** include:
- air release valves
 - energy dissipaters
 - flow control valves
 - non-return valves
 - pressure control valves
 - stop valves.
- Installation procedures:***
- are to include:
 - bedding down pipes
 - checking alignment, level and grade
 - positioning pipes
 - selecting size, type and material of pipe
 - may include:
 - repair work
 - bedding materials, including aggregate and sand
 - support systems, which may include:
 - bedding for in-ground trenches
 - concrete shoulders for above ground pipes.
- Testing*** procedures may include:
- air
 - ovality
 - pressure
 - tolerance

RANGE STATEMENT

- visual straightness
- water.

Unit Sector(s)

Unit sector Plumbing and services

Co-requisite units

Co-requisite units Nil

Functional area

Functional area