



Australian Government

Department of Education, Employment and Workplace Relations

RIICPL301A Install water mains pipelines

Release: 1

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Modification History

Not applicable.

Unit Descriptor

This unit covers the installation of water mains pipelines in the civil construction industry. It includes planning and preparing, setting out and excavating, installing mains pipeline, testing mains pipe system, and cleaning up. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

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 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. Plan and prepare	1.1. Access, interpret and apply <i>compliance documentation</i> relevant to the work activity 1.2. Obtain <i>safety requirements</i> from the site safety plan 1.3. Identify, obtain and implement <i>signage</i> requirements from the project <i>traffic</i> management plan 1.4. Select plant, <i>tools and equipment</i> to carry out tasks consistent with the requirements of the job, check for serviceability and rectify or report any faults 1.5. Identify, confirm and apply <i>environmental protection requirements</i> from the project environmental management plan
2. Set out and excavate	2.1. Prepare work area and <i>materials</i> to support the efficient <i>installation</i> of the pipe work 2.2. Determine and apply dewatering requirements 2.3. Determine location, alignment direction, level and grade of <i>mains pipe system</i> from job drawings/specifications 2.4. Set out works to specification 2.5. Advise plant operator of excavation requirements and monitor levels 2.6. Install mains pipe system <i>support mechanism</i> in accordance with plans, specifications and standards
3. Install mains pipeline	3.1. Lower and place pipes in position to design specifications 3.2. Join pipes in accordance with manufacturer's specifications 3.3. Place pipes and fit <i>valves</i> , fittings and flow control devices in accordance with drawings and specifications 3.4. Check continuously alignment level and grade for conformance with design plans and specifications 3.5. Position side support and/or overlay beside the pipes 3.6. Check mains pipe system support structure

	<p>3.7. Monitor backfill procedure to ensure work is completed to specification</p> <p>3.8. Construct valve chambers, minor structures and thrust blocks</p>
4. Test mains pipe system	<p>4.1. Perform <i>test</i> to relevant authority requirements as determined by the specifications</p> <p>4.2. Perform mains pipe system test procedures establishing pressurisation, functionality and serviceability</p> <p>4.3. Record and report test results</p>
5. Clean up	<p>5.1. Clear work area and dispose of or recycle materials in accordance with project environmental management plan</p> <p>5.2. Clean, check, maintain and store plant, tools and equipment</p>

Required Skills and Knowledge

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

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to install water mains pipelines:

- apply legislative, organisation and site requirements and procedures for installation of water mains pipelines
- organise work activities
- select and use relevant tools and equipment safely
- identify and report on hazards related to the worksite and work activity
- communicate effectively to receive and clarify work instructions

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to install water mains pipelines:

- civil construction terminology
- site and equipment safety requirements
- mains pipe systems and installation procedures
- confined space entry requirements
- dewatering
- concrete and concrete fabrication
- processes for interpreting engineering drawings
- equipment types, characteristics, technical capabilities and limitations
- operational, maintenance and basic diagnostic procedures including testing procedures
- mains water pressure
- valves and flow control devices
- water reticulation
- processes for the calculation of pipeline grades and percentages
- sedimentation and erosion controls
- excavation/trench safety
- site isolation and traffic control responsibilities and authorities
 - materials safety data sheets and materials handling methods
 - project quality requirements
- JSAs/safe work method statement

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	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	<p>The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following:</p> <ul style="list-style-type: none"> • knowledge of the requirements, procedures and instructions for installation of water mains pipelines • implementation of requirements, procedures and techniques for the safe, effective and efficient installation of water mains pipelines • working with others to undertake and complete the installation of water mains pipelines that meets all of the required outcomes • consistent timely installation of water mains pipelines that safely, effectively and efficiently meets the required outcomes • installation of a minimum of 100 metres of water mains pipeline to design specifications
Context of and specific resources for assessment	<ul style="list-style-type: none"> • This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of

	<p>assessment should not be greater than those required on the job.</p> <ul style="list-style-type: none"> • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.
Method of assessment	<p>This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:</p> <ul style="list-style-type: none"> • written and/or oral assessment of the candidate's required knowledge • observed, documented and/or first hand testimonial evidence of the candidate's: <ul style="list-style-type: none"> • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes • consistent achievement of required outcomes • first hand testimonial evidence of the candidate's: <ul style="list-style-type: none"> • working with others to undertake and complete the installation of water mains pipelines
Guidance information for assessment	<p>Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.</p>

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.

Relevant compliance documentation may include:	<ul style="list-style-type: none"> • legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation • work instructions, including plans, specifications, quality requirements and operational details
Safety requirements include:	<ul style="list-style-type: none"> • OHS requirements in accordance with state or territory legislation and regulations, organisational safety policies and procedures, and project safety plan including: protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of First Aid equipment, hazard control, and hazardous materials and substances • safe operating procedures including recognising and preventing hazards associated with underground services, other machines, personnel, restricted access barriers, traffic control, working in proximity to others, worksite visitors and the public • recognising hazards and risks including uneven/unstable terrain, trees, underground services, buildings, excavations, traffic, embankments, cuttings, structures and hazardous materials • safe parking practices including ensuring access ways are clear, equipment/machinery is away from overhangs and refuelling sites, safe distance from excavations, and secured from unauthorised access or movement • emergency procedures including emergency

	shutdown and stopping, extinguishing equipment fires, organisational First Aid requirements and evacuation
Signage for traffic control may include:	<ul style="list-style-type: none"> • escort vehicles • highway traffic signs • site safety signage • temporary signage for the benefit of motorists and pedestrians • barricades • traffic conditions signage
Traffic conditions may include:	<ul style="list-style-type: none"> • congested urban environments • low traffic rural areas • off-road un-trafficked areas • buildings • parking sites • pedestrian areas
Tools and equipment may include:	<ul style="list-style-type: none"> • levelling equipment • shovels • lifting equipment • crow bars • hammers • grinders • jointing equipment • oxy-acetylene equipment, • scaffolding • saws
Environmental protection requirements may include:	<ul style="list-style-type: none"> • organisational/project environmental management plan • waste management • water quality protection • noise • vibration • dust and clean-up management
Materials may include:	<ul style="list-style-type: none"> • pic • backfill • bedding materials
Installation procedures may include:	<ul style="list-style-type: none"> • selecting size, type and materials of pipe • bedding down pipes • positioning pipes • checking alignment, level and grade • repair work

Mains pipe system may include:	<ul style="list-style-type: none">• pressurised mains water pipelines• in-ground and above ground systems• pipes constructed from PVC, UPVC, poly, DICL, steel and copper
Support mechanism may include:	<ul style="list-style-type: none">• bedding for in-ground trenches which may include:<ul style="list-style-type: none">• aggregate• sand• concrete shoulders for above ground pipes
Valves may include:	<ul style="list-style-type: none">• stop valves• flow control valves• non return valves• pressure control valves• energy dissipaters and air release valves
Test may include:	<ul style="list-style-type: none">• pressure• visual straightness• quality• tolerance• air• water

Unit Sector(s)

Underground Services

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.