

Domain	PLUMBING	Unit ID: 1914
Title:	Install and Repair water main pipes system	
Level: 2		Credits: 6

Purpose

This unit standard is intended for those who install and repair water main pipes system. People credited with this unit standard are able to plan and prepare for work, set out and excavate, install mains pipeline, repair burst/damage main lines and test mains pipe.

This unit standard is intended for those who work as plumbers.

Special Notes

1. Entry information:

Prerequisites

- 434 - Apply Occupational Health and Safety in Working Environment.

2. To demonstrate competence at minimum, evidence is required of correctly identifying requirements, finishing of the tasks, correctly selecting and using appropriate processes, tools and equipment and completing all work to specification.
3. Assessment evidence may be collected from a real workplace or simulated real workplace or an appropriate simulated realistic environment in which plumbing operations are carried out.
4. Tools and equipment may include but are not limited to leveling equipment, shovels, lifting equipment, crow bars, hammers, grinders, jointing equipment and may include oxy-acetylene equipment, scaffolding and saws.
5. Materials may include but are not limited to pipes, concrete, backfill and bedding materials.
6. Mains pipe systems may include but are not limited to pressurised mains water pipelines.
7. Types of mains pipe system may include in-ground and above ground.
8. Main pipes may be constructed from but not limited to Poly Vinyl Chloride (PVC), steel and High Density Polyethylene pipe (HDPE)
9. Safe operating procedures are to include but not be limited to recognising and preventing hazards associated with underground services, other machines, personnel, restricted access barriers, safety harness traffic control, working in proximity to others, worksite visitors and the public.

10. Performance of all elements in this unit standard must comply with all relevant workplace requirements and/or manufacturers' specifications.
11. Regulations and legislation relevant to this unit standard include the following:
 - Labour Act No. 11 of 2007
 - Regulations relating to the health & Safety of employees at work under Schedule 1 (2) of the Labour Act No.11 of 2007 and all subsequent amendments
 - Local Authorities Act No. 23 of 1992
 - Environmental Management Act No. 7 of 2007

Quality Assurance Requirements

This unit standard and others within this subfield may be awarded by institutions which meet the accreditation requirements set by the Namibia Qualifications Authority and the Namibia Training Authority and which comply with the national assessment and moderation requirements. Details of specific accreditation requirements and the national assessment arrangements are available from the Namibia Qualifications Authority and the Namibia Training Authority on www.nta.com.na.

Elements and Performance Criteria

Element 1: Plan and prepare for work

Range

Planning and preparation is to include but is not limited to worksite inspection, hand tools defect identification, assessment of conditions and hazards and determination of work requirements.

Performance Criteria

- 1.1 Work instructions, including plans, specifications, quality requirements and operational details are obtained, confirmed and applied in line with workplace procedures.
- 1.2 Safety requirements are implemented in line with workplace procedures.
- 1.3 Signage requirements are identified and implemented in line with workplace procedures.
- 1.4 Plant, 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 in line with workplace procedures.
- 1.5 Environmental protection requirements are identified and applied in line with workplace procedures.

Element 2: Set out and excavate

Performance Criteria

- 2.1 Work area and materials are prepared to support the efficient installation of pipe work in line with workplace procedures.
- 2.2 Dewatering requirements are determined and applied in line with workplace procedures.
- 2.3 Location, alignment direction, level and grade of mains pipe system is determined from job drawings and specifications.
- 2.4 Work is set out to specifications.
- 2.5 Plant operator is advised of excavation requirements and levels are monitored in line with specifications.

Element 3: Install mains pipeline

Range

Valves and flow control devices are to include stop valves and may include flow control valves, non return valves and pressure control valves.

Bedding materials may include aggregate and sand.

Support systems may include bedding for in-ground trenches or concrete shoulders for above ground pipes and thrust blocks.

Pipe joining methods may include bedding but not be limited to rubber ring, solvent welded and may include arc welded and mechanical jointed.

Performance Criteria

- 3.1 Pipes are placed in positions according to design specifications.
- 3.2 Pipes are joined in line with manufacturers' specifications.
- 3.3 Pipes are placed and valves, fittings and flow control devices are fitted in line with drawings and specifications.
- 3.4 Alignment level and grade is checked continuously for conformity with design plans and specifications.
- 3.5 Side support and overlay is positioned beside the pipes in line with workplace procedures.
- 3.6 Mains pipe system support mechanism is installed in accordance with specifications and workplace procedures.

- 3.7 Mains pipe system support structure is checked in line with workplace procedures.
- 3.8 Backfill procedure is monitored to ensure work is completed to specifications.
- 3.9 Valve chambers, thrust blocks and other minor structures are constructed in line with workplace procedures.

Element 4: Repair Burst / Damage main lines

Performance Criteria

- 4.1 Broken pipes are isolated by means of closing nearby valves.
- 4.2 Trenches are excavated to determine the damage.
- 4.3 Damage section is removed by using appropriate tools and equipment's.
- 4.4 Materials are used to fit replacement pipes or connectors.
- 4.5 Valve is opened and leaks are tested.

Element 5: Test mains pipe

Range

Testing procedures may include but not be limited to pressure, visual straightness, ovality, tolerance, air and water.

Performance Criteria

- 5.1 Test is performed to relevant requirements as determined by specifications.
- 5.2 Mains pipe system test procedures are performed to establish pressurisation, functionality and serviceability.
- 5.3 Test results are recorded and reported in line with workplace procedures.

Registration Data

Subfield:	Civil and Building Services Engineering
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Body responsible for review:	Namibia Training Authority