

Domain

ELECTRICAL INSTALLATION

Title:

Install electrical fixed equipment

Level: 3

Credits: 10

Purpose

This unit standard is intended for those who install electrical fixed equipment. People credited with this unit standard are able to plan and prepare for work; mount fixed equipment; select and terminate electrical cables; test installation of electrical equipment; and clean-up work area.

Special Notes

1. Entry information:

Prerequisite

- *Unit 1157 - Demonstrate basic knowledge of workplace health and safety*

2. To demonstrate competence, at a minimum, evidence is required of installing electrical fixed equipment. Perform these tasks ensuring correct identification of requirements, selection and use of appropriate processes, tools and equipment and completing all work to specification.

3. Assessment evidence may be collected from a real workplace or an appropriate simulated realistic environment in which electrical operations are carried out.

4. Glossary of terms

- '*isolation and lockout procedures*' refer to isolating an electrical circuit from the source of supply
- '*specifications*' refers to any, or all of the following: manufacturers' specifications and recommendations, workplace specific requirements, national and international standards and legislations
- '*ISO*' refers to International Organization for Standards
- '*SANS*' refers to South African National Standards
- '*TT system*' refers to *terra* and *terra* where *terra* is a direct connection point to earth
- '*TN-S system*' refers to *terra* and *neutral separate*
- '*TN-C-S system*' refers to *terra* and *neutral combined* from the supply and then *separated* in an installation
- '*TN-C system*' refers to *terra* and *neutral combined*.

5. Performance of all elements in this unit standard must comply with industry standards.
6. Regulations and legislation relevant to this unit standard include the following:
 - Labour Act No. 11 of 2007
 - Petroleum Products and Energy Amendment Act No. 2 of 2005
 - National Energy Fund Act of 2000
 - Gas Act (Draft 2b)
 - 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.
 - ISO 14001 (Environmental Management Standard)
 - Electricity Act No.4 of 2007
 - SANS 10142-1 and SANS 10142-2 electrical wiring codes and all subsequent amendments to any of the above.

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 on www.namqa.org and the Namibia Training Authority on www.nta.com.na.

Elements and Performance Criteria

Element 1: Plan and prepare for work

Performance Criteria

- 1.1 Work instructions, including plans, specifications, circuit diagrams, quality requirements and operational details are obtained, confirmed and interpreted.
- 1.2 Safety and other regulatory requirements to which the electrical installation shall comply are identified, interpreted and followed.
- 1.3 Earthing is arranged to comply with the standards and local energy supplier's requirements.
- 1.4 Personal Protective Equipment are selected in line job and safety requirements.
- 1.5 Tools and equipment selected to carry out tasks are consistent with job requirements, checked for serviceability, and any faults are rectified or reported prior to commencement.
- 1.6 Signage and barricade requirements are identified and implemented, where necessary.

- 1.7 Material quantity requirements are calculated in line with plans, specifications and quality requirements.
- 1.8 Environmental protection requirements are identified and applied in line with environmental plans and regulatory obligations.

Element 2: Mount fixed equipment

Fixed equipment includes equipment as found in domestic, commercial and industrial premises (stoves, geysers, pumps and air conditioning units etc.).

Performance Criteria

- 2.1 Circuits are arranged to comply with technical standards and job specifications and requirements.
- 2.2 Mounting brackets and other fixtures are installed according to manufacturers' procedures.
- 2.2 Equipment is installed according to manufacturer's specifications and procedures.

Element 3: Select and terminate electrical cables

Range

Cables may include but not limited to tough plastic-sheathed (TPS), mineral-insulated metal-sheathed (MIMS), and conduit wire, neutral-screened (co-axial) cable and steel wire armoured (SWA).

Data may include but are not limited to maximum demand, maximum permissible voltdrop, length of run, class of excess-current protection, grouping and installation method.

Performance Criteria

- 3.1 Type of cable chosen is matching the application in terms of operating conditions and environment.
- 3.2 Cable size is determined from given data in accordance with electrical standards and manufacturer's data.
- 3.3 Tools for cable works are identified and selected.
- 3.4 Cables are surface mounted for permanent wiring using accessories according to regulations and workplace procedures.
- 3.5 Equipment is confirmed as being isolated from the supply according to workplace procedures.

- 3.6 Flexible cord is terminated at the appliance in accordance with electrical regulations and workplace procedures.
- 3.7 Termination of cables and conductors are checked to meet the requirements of electrical regulations and installation plans.
- 3.8 Terminations are completed in line with workplace procedures and time frame.

Element 4: Test installation of electrical equipment

Performance Criteria

- 4.1 Tests and adjustments of all component and parts are completed in accordance with industry practice.
- 4.2 Tests are conducted to confirm that the complete installation operates in accordance with the specifications.
- 4.3 Results are recorded in accordance with specifications and industry requirements.
- 4.4 The operation of the equipment, warranty and service options is understood by the customer.
- 4.5 Support materials are supplied to customer in accordance with contract and enterprise requirements.

Element 5: Clean-up work area

Performance Criteria

- 5.1 Work is completed and personnel are notified in accordance with workplace procedures.
- 5.2 Work area is cleared, cleaned, restored and secured in line with workplace procedures.
- 5.3 Tools and equipment are cleaned, checked and stored in line with manufacturer specifications and workplace procedures.
- 5.4 Materials and wastes are disposed of, reused, or recycled in accordance with legislation, regulations, codes of practice and job specifications.

Registration Data

Subfield:	Electrical Engineering
Date first registered:	24 July 2014
Date this version registered:	23 November 2023
Anticipated review:	23 November 2028
Body responsible for review:	Namibia Training Authority