

Unit ID 1137

Domain

**ROAD CONSTRUCTION AND
MAINTENANCE - INSPECTION**

Title:

**Demonstrate knowledge of road
construction and maintenance
methods as an Inspector**

Level: 3

Credits: 10

Purpose

This unit standard is intended for people engaged in roles involving the inspection of road construction and/or maintenance works related to the monitoring of contract provisions. People credited with this unit standard are able to demonstrate knowledge of: road construction processes and technologies; road construction elements; concrete technology associated with road construction and maintenance; and the maintenance of roads.

Special Notes

1. Entry requirements
None.
2. This unit standard requires some aspects to be assessed on the basis of evidence from demonstrated performance on a worksite or worksites. Assessment parameters will depend on company and site specific equipment, procedures, and practices.
3. Performance of all the requirements for each element must be in accordance with *technical instructions* which refers to the documented procedures for the method of carrying out construction or maintenance work. For this unit standard, the documented procedures could be any or all of: manufacturers' instructions; company procedural documents; local authority requirements; contract specifications; training and resource materials linked to registered unit standards in this Subfield.
4. Definitions
 - a) For the purpose of this unit standard, *road construction and maintenance methods* refers, as a minimum, to the following:
 - Layerworks – working with crusher run, dump rock, natural sands and gravels, and clay.
 - Stabilisation of materials – with lime, cement, tar, bitumen and modified bitumen.

- Drainage works – installation of pre-cast concrete pipes, chute channels, manholes, inspection chambers, and culverts, installation of sub-soil drains, installation of catch pits, installation of in situ cast v-drains, installation of pre-cast and in situ kerbing.
- Road surfacing – use of gravel, pre-cast blocks, sand and gravel slurries, crushed stone/bituminous seals, pothole repair.
- Concrete works – mixing, transporting, placing and compacting, curing, testing, finishing.
- Blading – gravel, sand and salt road maintenance.
- Finishing – guardrails, embankment protection, line marking and stud placement, erection and maintenance of sign boards (both directional and regulatory) and repair of any of these.
- Road reserves – vegetation control, drainage maintenance.

The term also includes the selection and application of appropriate plant and equipment to undertake the construction and/or maintenance work.

- b) *Materials* refers to relevant soils (such as sands, gravels, crushed aggregates), cement and bitumen products, water, fuels and lubricants, paints needed to undertake the actions required to achieve expected work outcomes. *Characteristics* of these materials could include type, volume, weight, workability, consistency, handling, hazardous nature, etc.

5. Regulations and legislation relevant to this unit standard include but are not limited to the following:
- Labour Act, No. 11 of 2007 as amended
 - Regulations relating to the Health and Safety of employees at work, 1997
 - Road Traffic and Transport Regulations No. 52, 1999 and Government Notice No. 53 on Road Traffic and Transport Regulations
 - Road Ordinance 30 of 1960 and 17 of 1972 and other similar legislation
 - The SADC Road Traffic Signs Manual
- and all subsequent amendments.

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. All approved unit standards, qualifications and national assessment arrangements are available on the Namibia Training Authority website www.nta.com.na

Elements and Performance Criteria

Element 1: Demonstrate knowledge of road construction and maintenance processes and technologies

Performance Criteria

- 1.1 The construction process is described in terms of common sequence of actions.
- 1.2 The principal purpose(s) of each stage in a common construction sequence is explained in terms of achieving quality roads.
- 1.3 Common technologies associated with construction and maintenance activities at each stage in the sequence are identified and explained in terms of the purpose of their application.
- 1.4 Economic factors commonly taken into consideration in each phase of road construction and maintenance are identified and explained.
- 1.5 Environmental conditions and problems commonly encountered in Namibia road construction activities or accommodated for in contracts are identified and explained.
- 1.6 Methods and measures adopted to control or respond to environmental conditions and problems are explained in terms of their effects on construction and maintenance actions.
- 1.7 Traffic accommodation controls are explained in terms of applicability, set out, erection and dismantling or discontinuance.

Element 2: Demonstrate knowledge of road construction elements

Performance Criteria

- 2.1 Properties, characteristics, and uses of soils and other materials used in construction and maintenance work are explained.
- 2.2 Techniques for achieving quality stabilised and unstabilised layerwork are explained in terms of common practices in Namibia.
- 2.3 Techniques for achieving and testing for optimum water content and compaction of layerwork materials are explained in accordance with technical instructions.
- 2.4 Drainage layout and installation techniques are explained in terms of common practices in Namibia.
- 2.5 Road surfacing application techniques are explained in terms of common practices in Namibia.

- 2.6 Road finishing techniques are explained in terms of common practices in Namibia.
- 2.8 Types of plant and number and classes of plant operators associated with construction and maintenance actions are described.

Element 3: Demonstrate knowledge of concrete technology associated with road construction and maintenance

Performance Criteria

- 3.1 The principles, properties and use of concrete are explained in terms of common practices in Namibia.
- 3.2 Tests associated with concrete mixing and applications are described in terms of timing and purpose.
- 3.3 Key features of elements constructed with concrete are explained in terms of design features, construction or installation steps, and application in roading systems.

Element 4: Demonstrate knowledge of the maintenance of roads

Range

Blading techniques may be explained for any of gravel, sand, or salt road finishes.

Performance Criteria

- 4.1 Bituminous road re-surfacing and maintenance techniques and technologies are explained in accordance with technical instructions.
- 4.2 Blading techniques and technologies are explained in accordance with technical instructions.
- 4.3 Road crack, pothole and edging repair techniques are described and techniques demonstrated to technical instructions.
- 4.4 Road furniture maintenance techniques are explained and, in the case of signage maintenance, demonstrated to technical instructions.
- 4.5 Road surface marking techniques are explained and, in the case of stud installation or replacement, and paint markings, demonstrated to technical instructions.

Registration Data

Subfield:	Road Construction and Maintenance
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