

Unit ID: 904

**Domain FOUNDATION BUILDING SCIENCE AND
DRAWING SKILLS**

**Title: Apply fundamental knowledge of building
drawing in different contexts**

Level: 3

Credits: 6

Purpose

This unit standard specifies the competencies required to apply fundamental knowledge of building drawing in different contexts. It includes apply knowledge of building drawing fundamentals, produce views of brickwork and masonry for walls up to 1 ½ brick thickness, produce fundamental drawings foundations, walls and floors, produce fundamental drawings of arches, lintels and openings, draw fundamental views of roof structures, draw fundamental views of windows, doors and jambs, and interpret and draw drawings for drainage. This unit standard is intended for people requiring fundamental building drawing skills as applied in different contexts.

Special Notes

1. This unit standard may be assessed in any context of operation and may be assessed in conjunction with other relevant technical unit standards selected from a particular domain that has a thematic link to this unit standard.
2. Glossary of terms:
 - 'SABS' refers to South Africa Bureau of Standards.
3. Assessment evidence may be collected at any realistic place where logical collection of such evidence can be achieved.
4. This unit standard gives users exposure to a holistic approach of study and world of work to gain an understanding of the world as a set of related systems, by recognizing that problem solving contexts do not exist in isolation but that they may differ from context to context according to the area of application.
5. The correct use of the suitable technical terminology must be stressed, especially in formulating definitions and principles.
6. All diagrams and graphs should be drawn in pencil and must be supplied with the necessary subtitles (labels in ink).
7. All printing must be done free-hand in pencil according to the SABS 0111-1 Code of Practice for Engineering Drawing.
8. All drawings must be done with drawing instruments, the only exceptions being printing, free-hand drawing and the C-type line and break line.
9. All work must comply with legislation and all subsequent amendments.

10. Regulations and legislation relevant to this unit standard include the following:
- Labour Act, No. 11, 2007.
 - Occupational Health and Safety Regulations No. 18, 1997 and all subsequent amendments
 - SABS 0143: 1994, Code of practice for Building drawing practice
 - SABS 0111-1: 1993, Code of practice for Engineering drawing, Part 1: General principles

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: Apply knowledge of building drawing fundamentals

Range

General terms used in building drawing may include but are not limited to drawing, centre, centre-line, cylinder (cylindrical), degree, hexagon, and material, internal diameter, outside diameter, diameter, metre, millimetre, and radius, maximum and, minimum.

Terms related to dimensions and tolerances may include but are not limited to parallelism, basic, dimensions, tolerance, angularity, concentricity, flatness, cylindricity, roundness, functional dimension, straightness, symmetry, tolerance zone, auxiliary dimension, position, non-functional dimension, redundant dimension, true lengths and true position and/or true profile.

Performance Criteria

- 1.1 Abbreviations for general terminologies and symbols and concepts relating to dimensions and tolerances used in building drawings are identified and correctly used.
- 1.2 Dimensioning rules for dimension and projection lines are applied.
- 1.3 Geometrical constructions of bisecting of lines, perpendicular lines, parallel lines and constructing and bisecting angles are drawn using drawing instruments.
- 1.4 Various geometrical figures are constructed with the aid of drawing instruments.
- 1.5 Principles of projection are applied in drawing first and third angle orthographic projection, axonometric drawings and plan views of site plans (3-4-5) are correctly applied.

Element 2: Produce views of brickwork and masonry for walls up to 1 ½ brick thickness.

Performance Criteria

- 2.1 The arrangement of standard bricks in several of bonds are identified and drawn.
- 2.2 Views of brickwork for walls up to 1 ½ brick thickness and combinations in isometric, plan view and elevations (English bond, Stretcher bond, Flemish bond and Garden wall bond) are drawn.
- 2.3 Pictorial views and sections of quoins and T-junctions are drawn in various bonding patterns.
- 2.4 Elevations and sections of masonry walls in random rubble, snecked rubble and ashlar are drawn.

Element 3: Produce fundamental drawings of foundations, walls and floors.

Performance Criteria

- 3.1 Sections are drawn through strip foundations and foundation with footings.
- 3.2 Sectional elevations of piers and honeycomb walls are drawn.
- 3.3 Foundation brickwork up to 2 brick thickness.
- 3.4 Sectional views of walls which include cavity wall, sectional elevations with windows, airbricks and ventilation, air ducts and plaster.
- 3.5 Sectional views and details of suspended timber floors including waterproofing and ventilation are drawn.
- 3.6 Sectional views and details of concrete and cement floors (including internal walls) are drawn.
- 3.7 Reinforced floors without beams are drawn showing details of reinforcing.
- 3.8 Fireplaces in a long wall of a room and a short wall of a room are drawn.

Element 4: Produce fundamental drawings of arches, lintels and openings.

Performance Criteria

- 4.1 From given information, the parts around an opening (for windows and doors) in a wall are drawn.
- 4.2 Structural principles to consider when choosing relative widths of openings are interpreted.

- 4.3 Supports for brickwork over the head of an opening are identified.
- 4.4 Elevations, plan views and sections of precast lintels, cast in situ lintels and ring beams are drawn.
- 4.5 Elevations and sections of segmental and semi-elliptical arches in rough bricks and gauged bricks are drawn.

Element 5: Draw fundamental views of windows, doors and jambs.

Range

Steel windows to show sections at head and sill and the placement of frames in relation to adjacent construction.

Performance Criteria

- 5.1 Various views and sections of wooden casement windows with fanlight and steel windows are drawn.
- 5.2 Various views and sections of doors, steel and wooden door jambs in walls up to 1 brick thickness.
- 5.3 Views of frames in relation to adjacent construction and method of fixing frames are drawn.

Element 6: Draw fundamental views of roof structures.

Range

Roof truss construction inclusive of, but not limited to Howe truss, SA (South Africa) roof truss and fink truss.

Details required for roof trusses drawings may include but are not limited to Ceiling details (also suspended), eaves (open, closed and flush), roof coverings (tiles), valleys, ridges and hips, chimney stack and sectioning, parapet walls and flashing.

Performance Criteria

- 6.1 Various roof truss constructions are drawn.
- 6.2 Sectional views and elevations of roof trusses and their details are drawn.

Element 7: Interpret and draw drawings of drainage.

Range

Fittings limited to gutters and down pipes.

Performance Criteria

- 7.1 Various abbreviations for fittings are interpreted and neat drawings of various sections and fittings used in drainage are produced.
- 7.2 Methods of fixing gutters in position at the eaves of a roof are drawn.
- 7.3 Sectional views of fittings and methods of joining gutters and down pipes at the eaves of a roof are drawn.
- 7.4 Sectional views showing the construction of parapet gutters are drawn.
- 7.5 Simple line diagrams to showing hot water and cold water layouts are drawn.

Registration Data

Subfield:	Building Science and Drawing
Date first registered:	18 November 2010
Date this version registered:	18 November 2010
Anticipated review:	2015
Body responsible for review:	Namibia Training Authority