

Domain**BRICKLAYING****Title:****Carry out reinforced concrete work****Level: 3****Credits: 4****Purpose**

This unit standard specifies the competencies required to carry out reinforced concreting work for the construction of in-situ reinforced concrete structures such as slabs and other common concrete works. It includes setting out, reinforcing, erecting and dismantling formwork, placing, finishing and curing concrete. This unit standard is intended for those who work as bricklayers and plasterers.

Special notes

1. Entry information

Prerequisite:

- Unit 3 - *Apply safety rules and regulations in bricklaying operations* or demonstrated equivalent knowledge and skills.

2. Concreting work is to include but not be limited to footpaths, repairing of kerb and channel, footings, slabs on ground, suspended slabs, beams, columns, stairs, ramps, pads, walls, structural members and lintels.
3. To demonstrate competence, at a minimum, requires evidence of completing at least two concreting projects (each a minimum of one cubic metre of concrete), incorporating a minimum of two different finishes. At least one project must contain angled formwork and bent reinforcement. Perform these tasks ensuring correct identification of requirements and finishing of the tasks, correct selection and use of appropriate processes, tools and equipment and completing all work to specification.
4. Assessment evidence may be collected from a real workplace or a simulated real workplace or an appropriate simulated realistic environment in which bricklaying operations are carried out.
5. All inspection, operation and maintenance procedures associated with the use of tools and equipment shall comply with manufacturers' guidelines and instructions.
6. '*Specifications*' refers to any, or all of the following: manufacturers' specifications and recommendations, site and workplace specific requirements.
7. Regulations and legislation relevant to this unit standard include the following:
 - Labour Act No 6 1992
 - Occupational Health and Safety Regulations No.18, 1997 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 on www.nta.com.na

Elements and Performance Criteria

Element 1: Plan and prepare for work

Range

Planning and preparation is to include but not be limited to worksite inspection, equipment 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.
- 1.2 Safety requirements are followed in accordance with safety plans and policies.
- 1.3 Sign and barricade requirements are identified and implemented.
- 1.4 Plant, tools and equipment selected to carry out tasks that are consistent with the requirements of the job, checked for serviceability and any faults are rectified or reported prior to commencement.
- 1.5 Material quantity requirements are calculated in accordance with plans and/or specifications.
- 1.6 Materials appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use.
- 1.7 Environmental protection requirements for the project are identified and applied in line with environmental plans and regulatory obligations.

Element 2: Prepare concreting materials

Range

Materials are to include but are not limited to water, sand, premix concrete, concrete blend, cement, formwork components, curing compounds, form release agents, steel reinforcing, bar chairs, vapour barriers and membranes.

Reinforcement components are to include but are not limited to mesh, reinforcement bars/rods and binding wire.

Performance Criteria

- 2.1 Location of steel reinforcement and formwork is determined from drawings and reinforcement schedule.
- 2.2 Reinforcement is checked against reinforcement drawings and specifications.
- 2.3 Formwork components/materials are selected consistent with job.
- 2.4 Fixing/fasteners are selected and used consistent with requirements of the job.

Element 3: Set out for concrete work

Performance Criteria

- 3.1 String lines are set accurately from existing pegs.
- 3.2 Grades are checked to ensure correct fall.
- 3.3 Services are identified and protected to prevent damage.

Element 4: Erect formwork

Range

Formwork may include but is not limited to steel shutters, timber, plywood, fibreglass, masonry, expanded polystyrene and structural cardboard.

Performance Criteria

- 4.1 Work area is cleared and surface prepared for safe erection of formwork.
- 4.2 Formwork is set out to requirements of drawings and specifications.
- 4.3 Formwork is assembled/erected to specifications.
- 4.4 Debris, sawdust and other waste material are safely removed from formwork.
- 4.5 Form release agent is applied to manufacturers' specifications.

Element 5: Construct and install reinforcement

Performance Criteria

- 5.1 Reinforcing fabric and bars are cut and bent as required to project drawings and specifications.
- 5.2 Fabric and bars are tied/fixed to configuration from project drawings and specifications.
- 5.3 Stiffening rods are attached to panels as required to facilitate handling.

- 5.4 Reinforcement material is located in formwork and placed on bar chairs/spacers as determined from drawings, noting clearance from formwork.
- 5.5 Cast-ins are located and secured.

Element 6: Carry out concrete work

Range

Transporting of concrete may include but is not limited to pre-mix truck, pumping equipment and wheelbarrow. Evidence of the use of two methods is required for assessment purposes.

Placing methods of concrete includes but is not limited to wheelbarrows, pumping equipment, truck placed, shovelling and includes vibrating. Evidence of the use of two methods is required for assessment purposes.

Finishing techniques for concrete are to include but are not limited to steel trowel, mechanical trowelling machine, broom finished, wood float, bull float and brushed.

Curing is to include but not be limited to flooding, coating with a membrane, applied moisture, steam, curing compound or plastic sheeting. Evidence of the use of two methods is required for assessment purposes.

Methods to avoid segregation are to include but are not limited to using through minimising the height of a vertical drop and using pumps with a flexible hose. Evidence of the use of two methods is required for assessment purposes.

Performance Criteria

- 6.1 Concrete is transported correctly and discharged into formwork, using correct manual handling techniques.
- 6.2 Concrete is placed correctly to instruction and screeded to specified levels and grades.
- 6.3 Concrete is compacted to specification using immersion vibrator or other specified method.
- 6.4 Concrete is finished and curing process applied to specifications.
- 6.5 Control joints are positioned and installed to specification.
- 6.6 Dowel joints are positioned to specification.
- 6.7 Concrete surface is adequately covered and protected.

Element 7: Strip formwork

Performance Criteria

- 7.1 Edge boxing and braces are removed carefully, safely and sequentially.
- 7.2 Timber components are dewatered, cleaned and stored or stacked.

- 7.3 Steel components are cleaned, oiled and stored or stacked.
- 7.4 Damaged formwork components are discarded after stripping.
- 7.5 Screens are safely cleaned before movement where applicable.

Element 8: Clean up

Performance Criteria

- 8.1 Work area is cleared and materials disposed of, reused or recycled in accordance with legislation, regulations and job specifications.
- 8.2 Plant, tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturers' recommendations and standard work practices.

Registration Data

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