QUALIFICATION		SPECIFICATION	SECTION A
QUALIFICATION DEVELOPER	CONSTRUCTION INDUSTRY TRUST FUND		
TITLE	CERTIFICATE III IN CONCRETE TECHNOLOGY	NCQF LEVEL	3
FIELD	PHYSICAL PLANNING AND CONSTRUCTION	SUB-FIELD	CONSTRUCTION

New qualification	√	Review of existing qualification					
SUB-FRAMEWORK	General Education		TVET	√	Higher Education		
QUALIFICATION TYPE	Certificate	√	Diploma		Bachelor		
	Bachelor Honours		Master		Doctorate/ PhD		
CREDIT VALUE					42		

RATIONALE AND PURPOSE OF THE QUALIFICATION

Rationale

Government has identified high unemployment and poverty amongst youth as a national security risk, hence the need to train this section of the population in productive and income generating skills.

Despite the country continuing to receive investments, these investments are biased towards capital intensive ventures. This situation has the inherent risk of unemployment continuing to surge, and the government, through its vital development policy paper, National Development Plan 11 (NDP 11), has identified areas of potential high employment uptake such as services, and manufacturing and has made a commitment to give these sectors extensive support with a view of making a meaningful contribution to the growth of the economy.

Another policy document that make mention of skills development as a vehicle towards inclusivity and provision of opportunities for all, is the Vision 2036 document under the Human and Social

Development (Pillar 2) which states that “Botswana society will be knowledgeable with relevant quality education that is outcome based, with emphasis on technical and vocational skills as well as academic competencies.”

Civils Construction is a sector that in any society appeals to all age brackets, including the youth. The sector provides opportunities to gain the requisite skills necessary to combine their cognitive skills with

their psychomotor skills and put them to good use. There are a lot of career opportunities in this sector and it is an area where education and brevity combine to bring out a well-rounded individual capable of actively participating in the mainstream economy of the country.

Concreting, being part of the construction trades, have also been forecasted as one of the top occupations in demand for the future (HRDC, 2019)

This qualification provides qualifying learners with the underlying Concreting knowledge, skills and values in order to become competent practitioners of the Construction Industry; be employed or self-employed within the industry and pursue further learning in specific areas of Civil Engineering.

Purpose

The purpose of this qualification is to equip learners with knowledge, skills and competencies to:

- Construct formwork for concrete
- Calculate concrete mixing proportion for any concrete work.
- Mix concrete manual or by machine
- Cast concrete to building structures or components
- Produce a slump test for quality of concrete
- Perform strength test through testing equipment
- Cure concrete to archive required strength.

ENTRY REQUIREMENTS (including access and inclusion)

Entry Requirements:

- Certificate II in Concrete Technology (NCQF Level 2) or equivalent.
- There shall be access through RPL and CAT in line with the National RPL and CAT Policies

QUALIFICATION SPECIFICATION SECTION B	
GRADUATE PROFILE (LEARNING OUTCOMES)	**ASSESSMENT CRITERIA**
At the end of three months, learners undertaking this qualification should have completed the Learning Objectives below and been declared competent in their associated Assessment Criteria	
1. Apply the principles of Occupational Health and Safety in the Work Environment	1.1 Identify hazards in the Workplace 1.2 Asses possible risks in the workplace 1.3 Practice Good Housekeeping 1.4 Wear Appropriate Personal Protective Equipment
2. Demonstrate knowledge of Entrepreneurial principles in the workplace	2.1 Plan for given work assignments 2.2 Solve problems creatively in the workplace 2.3 Mobilise people and resources to execute tasks 2.4 Create value through implementation of innovative ideas
3. Calculate concrete mixing ratios for aggregates.	3.1 Interpret the drawing to extract the information. 3.2 Calculate the volume of concrete required. 3.3 Quantify batching quantities of each aggregate. 3.4 Place the aggregates according to mixing procedure.
4. Construct formwork for concrete placing	4.1 Prepare the area for placing the formwork. 4.2 Erect suitable scaffolding around the formwork. 4.3 Erect the formwork as per the drawing. 4.4 Secure formwork to insure stability. 4.5 Apply oil on formwork to avoid concrete sticking.

5 Mix concrete aggregates according to their ratios.	5.1 Clean the platform for batching aggregates. 5.2 Place the aggregates on the platform according to industry procedure. 5.3 Mix dry aggregates to avoid separation. 5.4 Add sufficient water to obtain smooth concrete. 5.5 Perform slump test on concrete
6 Cast concrete on formwork	6.1 Obtain clean tools to transport concrete. 6.2 Place the concrete in small layers for easy of compaction. 6.3 Compact concrete to avoid cavities in concrete. 6.4 Level the concrete for a smooth surface 6.5 Cover the concrete to promote good setting.
7 Cure concretes with different methods	7.1 Strip formwork on concrete to allow air circulation. 7.2 Put supporters on concrete to avoid sagging. 7.3 Spray clean water on concrete to slow drying process. 7.4 Cover the concrete with cloth/ plastic material to reduce evaporation rate.

QUALIFICATION STRUCTURESECTION C			
	Title	**Level**	**Credits**
FUNDAMENTAL COMPONENT Subjects / Units / Modules /Courses	Health And Safety Procedures For A Building And Construction Site	3	3
	Fundamental Entrepreneurial Principles	3	3
	Interpret Building Drawing	4	3
	Working At Heights	3	3
	Total		**12**
CORE COMPONENT Subjects / Units / Modules /Courses	Metric system of measurements	3	2
	Determination and transfer of levels	3	2
	Concrete Technology	3	2
	Concrete Materials and Properties	3	2
	Concrete Production Process	3	2
	Portable power tools as used in concrete work	3	3
	Quality assurance requirements in concrete industry work	4	3
	Concrete Testing	4	3
	Sustainable environmental management practices in the workplace	3	3
	Trench excavation, compaction and treatment	3	2
	Construction Equipment	3	2
			26
	Total		
ELECTIVE COMPONENT Subjects / Units / Modules /Courses			
	Introduction To Personal Computer	3	4
	Prepare The Business Plan	3	4
	Basic Soil mechanics	3	4
	Procure building and civil construction materials, tools and equipment	3	4
	Complete an incident report	3	4
	Quantify Earth Materials For Cut and fill	3	4
	Total		**4**

Rules of combinations, Credit distribution(where applicable):

The qualification consists of Fundamental, Core and elective Components.

To be awarded the Qualification learners are required to obtain a minimum of **42** credits as detailed below.

Fundamental Components:

The Fundamental components consist of foundational knowledge in Site Surveying to the value of **12** credits all of which are compulsory

Core Components:

The core components consist of modules containing applied knowledge and practical skills to the value of **26** credits which are compulsory.

Elective Components:

Learners are to choose elective modules to the value of at least 4 credits so as to attain a minimum of **5** credits for the qualification.

Modules	Fundamental	Core	Electives	Sub total
LEVEL 3	**12**	**20**	**4**	
LEVEL 4	**0**	**6**	**4**	
Total Credit	**12**	**26**	**4**	
Total Credit Value			**42**	

ASSESSMENT AND MODERATION ARRANGEMENTS

Assessment Strategies, Requirements and Weightings

All assessments leading/contributing to the award of credits, or a qualification shall be based on learning outcomes and/or sub-outcomes.

1 Formative assessment:

Formative or continuous assessment would be conducted to inform teaching and learning and establish the learner's level of readiness for progression to the next learning unit or module.

Formative assessment shall constitute 60% of the Final Mark

2 Summative assessment:

Internal summative assessments shall be carried out in accordance all applicable examination rules, and the weighting of the assessment shall constitute 40% of the Final Mark

All assessment shall be carried out by BQA registered and accredited Assessors.

Moderation

There shall be internal and external moderation carried out by BQA registered and accredited Moderators

RECOGNITION OF PRIOR LEARNING (if applicable)

Candidates may submit evidence of prior learning and current competence and/or undergo appropriate forms of RPL assessment for the award of credits towards the qualification in accordance with applicable RPL policies and relevant national-level policy and legislative framework.

PROGRESSION PATHWAYS (LEARNING AND EMPLOYMENT)

Articulation and Education Pathways

Horizontal Articulation:

Graduates of this qualification may consider pursuing to other qualifications on the same levels in the field of building construction such as

- Certificate III in Steel Fixing
- Certificate III in Shuttering

Vertical Articulation:

Learners may progress to higher level in the same field such as

- Certificate IV in Building Construction
- Certificate IV in Construction

Employment Pathways

Learners who attain this qualification will have competencies and attributes to work as:

- Concrete Hand/ Concreter
- Concrete Mixer operator
- Civils Engineering Assistants

QUALIFICATION AWARD AND CERTIFICATION

To be awarded this qualification, the candidate must have met the following requirements:

- All exit level outcomes
- Minimum **42 c**redit requirements
- All qualification requirements including modules.

Certification:
Upon completion of the qualification the candidate will be awarded a **Certificate III in Concrete Technology**

REGIONAL AND INTERNATIONAL COMPARABILITY

The Proposed Qualification was compared to the following Qualifications.

1.Academy for Construction Skills, (NQF Level 3), National Certificate: Construction Concreting, (152 credits) :United Kingdom

2. Glasgow Clyde College, (NVQ Level 2), Diploma in Specialist Concrete Occupations (Construction): (39 Credits) Scotland United Kingdom

This qualification was compared with similar qualifications in South Africa and Scotland and the following was found:

Similarities

All the qualifications cover all the technical aspects of concrete technology, that include description and use of concrete and other associated materials, interpretation of drawings, concrete repair, and routine tests carried on concrete work. Health and safety is an integral part of the qualification and forms part of the modules in all the two of the qualifications studied.

Assessment of all the qualifications studied is performance based, meaning that the qualification is essentially a practical one and evidence of competence is collected through demonstration, observation, or through a Portfolio of Evidence (PoE), when the assessment used is the Recognition of Prior Learning (RPL).

Differences

While all the four qualifications contain similar concrete technology modules and outcomes, there are slight variations when it comes to the peripheral outcomes. The South African qualification from the Academy of Construction Skills has placed great emphasis in the application of productivity and quality principles, while the Scotland qualification dwells on slightly advanced concrete applications like Substrate Preparation and Profiling and Concrete Drilling.

There is a wide disparity of credit weighting between the two qualifications, with the South African one loaded with 153 credits at Level 3, while the Scottish qualification has 39 credits.

Comparability and Articulation of the Proposed Qualification

The proposed qualification generally compares well with the qualification studied since the exit outcomes cover similar scope and depth and are aligned to exit-level descriptors typical of this level and as done within the region and beyond as well as competencies required for employment as a concrete hand.

Besides offering core concrete technology modules, the proposed qualification has fundamental modules that include occupational health and safety, entrepreneurship, and communication. The inclusion of these fundamentals is aimed at developing positive attributes on the learners to enable them to make wise choices in life and be able to cope with the real work situation.

REVIEW PERIOD

This qualification shall be reviewed after 5 years from the date of registration.