No. 1058 **10 September 2004**

SOUTH AFRICAN QUALIFICATIONS AUTHORITY (SAQA)

In accordance with regulation 24(c) of the National Standards Bodies Regulations of 28 March 1998, the Standards Generating Body (SGB) for

Civil Engineering and Construction

Registered by NSB 12, Physical Planning and Construction, publishes the following qualifications and unit standards for public comment.

This notice contains the titles, fields, sub-fields, NQF levels, credits, and purpose of the qualification and unit standards upon which qualifications are based. The full qualification and unit standards can be accessed via the SAQA web-site at **www.saqa.org.za**. Copies may also be obtained from the Directorate of Standards Setting and Development at the SAQA offices, Hatfield Forum West, 1067 Arcadia Street, Hatfield.

Comment on the unit standards should reach SAQA at the address ***below and no later than 10 October 2004.*** All correspondence should be marked **Standards Setting – SGB Civil Engineering and Construction** and addressed to

The Director: Standards Setting and Development
SAQA
Attention: Mr. D Mphuthing
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JOE SAMUELS
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SOUTH AFRICAN QUALIFICATIONS AUTHORITY

QUALIFICATION:

National Certificate: Construction Materials Testing

SAQA QUAL ID	*QUALIFICATION TITLE*	
49017	National Certificate: Construction Materials Testing	
SGB NAME	SGB Civil Engineering Construction	
ABET BAND	*PROVIDER NAME*	
Undefined		
QUALIFICATION CODE	*QUAL TYPE*	*SUBFIELD*
PPC-3-National Certificate	National Certificate	Civil Engineering Construction
MINIMUM CREDITS	*NQF LEVEL*	*QUALIFICATION CLASS*
120	Level 3	Regular-Unit Stds Based
SAQA DECISION NUMBER	*REGISTRATION START DATE*	*REGISTRATION END DATE*

PURPOSE OF THE QUALIFICATION

Learners found competent against this qualification will be able to safely execute sampling and laboratory testing. These test are for mix designs, quality control during construction and acceptance testing of completed products and stabilised materials.

For those with extensive experience in the workplace, this qualification can be used in the recognition of prior learning process to assess and recognise workplace skills acquired without the benefit of formal education and training.

For the new entrant, this qualification describes the learning outcomes required to effectively participate in a structured workplace.

For education and training providers, this qualification provides guidance for the development of appropriate learning programs and assessment documentation.

For employers, this qualification enables skills gaps to be identified and addressed ensuring that productivity levels are increased and business objectives achieved.

This qualification has been developed to provide flexibility and mobility / portability across the construction materials testing industry. This will allow for future career advancement across the various learning areas of construction materials testing.

Rationale for the qualification

The rationale for the introduction of a unit standard based - "National Certificate in Construction Materials Testing - NQF Level 3 " qualification- is to provide an introductory qualification for persons executing laboratory testing on construction materials.

Quality control during the construction process and the manufacturing of products used for construction, are totally dependent on the accurate execution of laboratory test by competent materials testers.

Learners will mostly be employed in the construction industry or the manufacturing of construction material products - where specialisation in the use of concrete, bituminous or soil materials occurs.

There is currently a critical shortage of competent Materials Testers in the Construction Industry.

The combination of learning outcomes in this qualification will provide learners with applied competence in the execution of laboratory sampling and laboratory testing procedures specifically for concrete, bituminous or soil construction materials depending on the Learning area taken.

The qualification will serve as a basis for learning towards the National Certificate in Construction Materials Testing - NQF Level 4

Its contribution to socio-economic transformation is that learners would be able to receive recognition for previous learning and experience. Employability and career prospects are enhanced. Progress to Level 4 - will enable learners to start their own businesses supplying a construction materials testing service - a process that will accelerate economic transformation and give economic empowerment.

The benefits to the economy is that quality products will be constructed / manufactured with lower maintenance cost, longer life spans and meeting the minimum requirements with respect to safety.

RECOGNIZE PREVIOUS LEARNING?

Y

LEARNING ASSUMED TO BE IN PLACE

Learners should have acquired the language competencies of NQF level 2 and mathematical literacy competencies of NQF Level 2, prior to embarking on learning towards this qualification.

Recognition of Prior Learning:

The qualification may be obtained through the process of Recognition of Prior Learning (RPL). Learners who have met the requirements of any unit standard in this qualification may apply for recognition of prior learning to the relevant body, and will be assessed against the assessment criteria and specific outcomes for the relevant unit standard/s.

QUALIFICATION RULES

Rules of Combination:

The qualification is composed of Fundamental, Core and Elective learning components: Fundamental - 44 credits. Core - 28 credits.

In order to be awarded the Qualification, the learner has to prove competence on all the Fundamental and Core unit standards, as well as a minimum of 48 credits from the elective list contained in Annexure C.

In order to cluster the elective learning in meaningful combinations that will assist learners to attain marketable skills in a specific direction and facilitate career development / career paths, the following are proposed learning areas.

Bituminous Materials Testing Learning area:

Fundamental: 44 credits Core: 28 credits Elective: 50 Total : 122 credits

> Execute sampling of asphalt materials for testing - NQF Level 3
> Execute laboratory testing pertaining to asphalt materials -NQF Level 3
> Execute sampling of bituminous binder materials for testing - NQF Level 3
> Execute laboratory testing pertaining to bituminous binders - NQF Level 3
> Demonstrate knowledge of and produce computer spreadsheets using basic functions -NQF Level 2
> Demonstrate knowledge of and produce word processing documents using basic functions - NQF Level 2

Concrete Materials Testing Learning area:

Fundamental: 44 credits Core: 28 credits Elective: 48 Total : 120 credits

> Execute sampling of concrete material for testing - NQF Level 3
> Execute laboratory testing pertaining to concrete -NQF Level 3
> Demonstrate knowledge of and produce computer spreadsheets using basic functions -NQF Level 2
> Demonstrate knowledge of and produce word processing documents using basic functions - NQF Level 2
> Demonstrate knowledge of concrete construction technology

Soils and Gravel Testing Learning area:

Fundamental: 44 credits Core: 28 credits Elective: 48 Total : 120 credits

> Execute sampling of soil & gravel material - NQF Level 3

> Execute laboratory testing pertaining to soils and gravels - NQF Level 3
> Demonstrate knowledge of and produce word processing documents using basic functions - NQF Level 2
> Demonstrate knowledge of and produce computer spreadsheets using basic functions -NQF Level 2
> Produce word processing documents for business - NQF Level 3
> Produce and use spreadsheets for business - NQF Level 3

EXIT LEVEL OUTCOMES

On completion of this qualification learners are able to demonstrate the following generic competence:

> Apply knowledge of physics and chemistry in the sampling and testing process of construction materials.
> Apply knowledge of occupational health and safety specifically applicable to construction materials testing.
> Apply knowledge of aggregate sampling and testing.

Elective exit level outcomes and associated assessment criteria for the different proposed learning areas are as follows:

Bituminous Materials, Concrete Materials, Soil and Gravel Materials Learning area

Demonstrate a basic competence to sample and test asphalt materials and bituminous binders, or concrete materials, or soil and gravel materials- in a safe and efficient manner.

ASSOCIATED ASSESSMENT CRITERIA

On completion of this qualification learners are able to demonstrate the following generic competence:

> The ability to apply knowledge of chemistry and physics is evaluated against standardised test procedures contained in various codes of practise.
> Industry norms and specifications are used to evaluate the application of occupational health and safety issues in the construction materials testing environment.
> Industry norms and specifications are used to evaluate the sampling and testing of aggregates.

Elective exit level outcomes and associated assessment criteria for the different proposed learning areas are as follows:

Bituminous Materials, Concrete Materials, Soil and Gravel Materials Learning area

> The identification of materials to be sampled and tested is demonstrated
> The correct apparatus are identified
> Both the apparatus and materials to be tested are prepared
> The test isexecuted under supervision and in compliance to specified test procedures
> Test readings are taken and test results recording

Integrated Assessment:

Formative assessments conducted during the learning process will consist of written tests, demonstrations and a number of self-assessments. The purpose of formative assessment is to diagnose learner strengths and weaknesses and to determine readiness for summative assessment.

Summative assessment would consist of written tests coupled with assignments, case studies and practical demonstrations. Summative assessments would only be conducted once the learner has indicated that he/she is ready to undergo summative assessment.

Before qualifying, the learners will be expected to demonstrate competence in a practical situation that integrates the assessment of all specific outcomes, for all unit standards.

Integrated assessment provides learners with an opportunity to display an ability to integrate practical performance, actions, concepts and theory across unit standards in order to achieve competence in relation to the purpose of this qualification.

In particular, assessors should check that the learner is able to demonstrate the ability to consider a range of options and make decisions about:

> The quality of the observed practical performance as well as the theory and underpinning knowledge behind it.

> The different methods that can be used by the learner to display thinking and decision making in the demonstration of practical performance.
> Reflexive competencies

INTERNATIONAL COMPARABILITY

The learning area qualification design model for the qualifications " National Certificate in Construction Materials Testing - NQF Levels 2; 3 & NQF 4 is unique to South Africa. In terms of this model, a learner can specialize in one of the three learning areas indicated in the articulation part of the qualification. On completion of any of the learning areas - the same qualification is awarded.

The learning area model is however comparable to the - "strand" - concept in qualifications registered on the New Zealand Qualifications Framework. The "strand " enables learners to specialise.

No information could be found on the New Zealand National Qualifications Framework for qualifications in Construction Materials Testing.

One training provider in Australia does offer a post certificate / diploma / degree course in Construction Materials Testing.(soils and concrete) The course has a duration of 108 hours.

By comparison, the National Certificates in Construction Materials Testing in South Africa all have a minimum of 142 credits - that is 1420 hours of training. The learning area - Concrete materials - is a much more comprehensive training program if the material range, number test procedures, and the number of training hours is considered.

The Scottish Qualifications Authority has a unit standard at level 4 "Building Materials: Performance Studies " - which contains a outcome - " describe and carry out tests on building materials and prepare laboratory reports. " - range statement - cement, aggregates, fresh concrete, hardened concrete, masonry products, timber and steel.

ARTICULATION OPTIONS

This qualification has been developed for mobility across various Learning areas in Construction Materials Testing.

Horizontal articulation is possible because the fundamental learning and the core units are the same for all the various Learning areas.

Refer to annexure C elective unit standards - rules of combination - where different combinations of electives together with Fundamental and Core learning - formatted in learning areas- on completion will result in the same generic National Certificate in Construction Materials Testing - NQF Level 3.

Articulation with the National Certificate in the Supervision of Construction processes at NQF Level 4 is possible since this qualification contains a unit standard dealing with the interpretation of test/ laboratory results.

Articulation with the National Diploma in the Management of Construction processes at NQF Level 5 is also possible since this qualification contains a unit standard dealing with the initiation of and interpretation of test / laboratory results.

Vertical articulation is also possible.
Learners can progress from level 2 to level 6 in the various Learning fields.

The following qualifications provide a learning pathway for the Construction Materials Tester / Technician / Technologist

NQF level 2:
National Certificate in Construction Materials Testing - various learning areas
NQF level 3: (this qualification)
National Certificate in Construction Materials Testing - various learning areas
NQF level 4: (generic qualification in process of registration)
National Certificate in Construction Materials Testing - various learning areas
NQF level 5: (still to be developed)
National Diploma in Construction Materials Technology - various learning areas

NQF level 6: (still to be developed)
National Degree in Construction Materials Technology

Equally, holders of other qualifications may be evaluated against this qualification for the purpose of RPL.

MODERATION OPTIONS

Assessment of learner achievements takes place at providers accredited by the relevant body (RSA, 1998b) for the provision of programs that result in the outcomes specified for the National Certificates in Construction Materials Testing. The relevant- ETQA, or other ETQA's who have a Memorandum of Understanding in place with the relevant - ETQA, is responsible for the moderation of learner achievements of learners who meet the requirements of this qualification.

Anyone assessing a learner or moderating the assessment of a learner against this qualification must be registered as an assessor with the relevant ETQA. Any institution offering learning that will enable the achievement of this qualification must be accredited as a provider with the relevant ETQA.

Assessment and moderation of assessment will be overseen by the relevant ETQA according to the ETQA's policies and guidelines for assessment and moderation; in terms of agreements reached around assessment and moderation between ETQA's and in terms of the moderation guideline detailed immediately below.

Moderation must include both internal and external moderation of assessments at exit points of the qualification, unless ETQA policies specify otherwise. Moderation should also encompass achievement of the competence described both in individual unit standards as well as the integrated competence described in the qualification.

Anyone wishing to be assessed against this qualification may apply to be assessed by any assessment agency, assessor or provider institution, which is accredited by the relevant ETQA

CRITERIA FOR THE REGISTRATION OF ASSESSORS

For an applicant to register as an assessor / moderator, the applicant needs:

> A recognized assessor qualification.
> Compliance with the relevant ETQA's requirements for assessor / moderator registration.
> Subject matter expertise in the unit standard/s for which assessor / moderation registration is sought, as well as an understanding of the context of the qualification in order to enable integrated assessment.
> A moderator qualification for applicants to register as moderator.

NOTES

N/A

UNIT STANDARDS
(Note: A blank space after this line means that the qualification is not based on Unit Standards.)

	UNIT STANDARD ID AND TITLE	*LEVEL*	*CREDITS*	*STATUS*
Core	7547 Operate a personal computer system	Level 2	6	Reregistered
Core	116560 Execute laboratory testing pertaining to aggregate materials	Level 3	10	Draft - Prep for P Comment
Core	116585 Execute sampling of aggregate materials for testing	Level 3	4	Draft - Prep for P Comment
Core	14547 Implement Occupational Health and Safety measures in a construction materials testing laboratory	Level 4	10	Registered
Elective	7568 Demonstrate knowledge of and produce word processing documents using basic functions	Level 2	3	Reregistered
Elective	7572 Demonstrate knowledge of and produce computer spreadsheets using basic functions	Level 2	3	Reregistered
Elective	7567 Produce and use spreadsheets for business	Level 3	5	Reregistered
Elective	7570 Produce word processing documents for business	Level 3	5	Reregistered
Elective	116557 Execute sampling of soils and gravels for testing	Level 3	12	Draft - Prep for P Comment

Elective	116568 Execute laboratory testing pertaining to asphalt materials	Level 3	20	Draft - Prep for P Comment
Elective	116570 Execute sampling of concrete material for testing	Level 3	7	Draft - Prep for P Comment
Elective	116576 Execute laboratory testing pertaining to bituminous materials	Level 3	10	Draft - Prep for P Comment
Elective	116584 Execute sampling of asphalt materials for testing	Level 3	10	Draft - Prep for P Comment
Elective	116586 Execute laboratory testing pertaining to soils and gravels	Level 3	20	Draft - Prep for P Comment
Elective	116588 Execute laboratory testing pertaining to concrete	Level 3	25	Draft - Prep for P Comment
Elective	15169 Organize and control the construction of bulk earthworks	Level 4	12	Registered
Elective	15172 Interpret test/lab results in civil construction	Level 4	4	Registered
Elective	15175 Plan, organise and control the construction of stabilized and unstabilized pavement layers	Level 4	12	Registered
Elective	15183 Demonstrate knowledge of concrete construction technology	Level 4	10	Registered
Elective	116589 Execute sampling of bituminous materials for testing	Level 4	3	Draft - Prep for P Comment
Elective	116591 Demonstrate an understanding of and adjust concrete mix design	Level 4	5	Registered
Elective	15190 Plan, organise and control asphalt paving construction	Level 5	15	Registered
Elective	15192 Plan, organise and control bituminous surfacing seal construction	Level 5	15	Registered
Fundamental	7456 Use mathematics to investigate and monitor the financial aspects of personal, business and national issues	Level 3	2	Registered
Fundamental	8968 Accommodate audience and context needs in oral communication	Level 3	5	Registered
Fundamental	8969 Interpret and use information from texts	Level 3	5	Registered
Fundamental	8970 Write texts for a range of communicative contexts	Level 3	5	Registered
Fundamental	8973 Use language and communication in occupational learning programmes	Level 3	5	Registered
Fundamental	9010 Demonstrate an understanding of the use of different number bases and measurement units and an awareness of error in the context of relevant calculations	Level 3	2	Registered
Fundamental	9012 Investigate life and work related problems using data and probabilities	Level 3	5	Registered
Fundamental	9013 Describe, apply, analyse and calculate shape and motion in 2-and 3-dimensional space in different contexts	Level 3	4	Registered
Fundamental	14539 Demonstrate an understanding and apply physical science and chemistry in construction materials testing	Level 4	8	Registered

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD: 1

Execute sampling of soils and gravels for testing

SAQA US ID	*UNIT STANDARD TITLE*
116557	Execute sampling of soils and gravels for testing

SGB NAME	*ABET BAND*	*PROVIDER NAME*
SGB Civil Engineering Construction	Undefined	

FIELD DESCRIPTION	*SUBFIELD DESCRIPTION*
Physical Planning and Construction	Civil Engineering Construction

UNIT STANDARD CODE	*UNIT STANDARD TYPE*	*NQF LEVEL*	*CREDITS*
PPC-CEC-0-SGB CEC	Regular	Level 3	12

Specific Outcomes:

SPECIFIC OUTCOME 1

Determine the number, size and type of samples.

SPECIFIC OUTCOME 2

Prepare for sampling under supervision.

SPECIFIC OUTCOME 3

Execute sampling under supervision.

SPECIFIC OUTCOME 4

Label containers and transport samples to laboratory under supervision.

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

Established in terms of Act 58 of 1995

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD: 2

Execute laboratory testing pertaining to aggregate materials

SAQA US ID	*UNIT STANDARD TITLE*
116560	Execute laboratory testing pertaining to aggregate materials

SGB NAME	*ABET BAND*	*PROVIDER NAME*
SGB Civil Engineering Construction	Undefined	

FIELD DESCRIPTION	*SUBFIELD DESCRIPTION*
Physical Planning and Construction	Civil Engineering Construction

UNIT STANDARD CODE	*UNIT STANDARD TYPE*	*NQF LEVEL*	*CREDITS*
PPC-CEC-0-SGB CEC	Regular	Level 3	10

Specific Outcomes:

SPECIFIC OUTCOME 1

Plan the execution of the testing.

SPECIFIC OUTCOME 2

Prepare sampled material for testing.

SPECIFIC OUTCOME 3

Execute the laboratory tests.

SPECIFIC OUTCOME 4

Record and store test readings.

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD: 3

Execute laboratory testing pertaining to asphalt materials

SAQA US ID	*UNIT STANDARD TITLE*
116568	Execute laboratory testing pertaining to asphalt materials

SGB NAME	*ABET BAND*	*PROVIDER NAME*
SGB Civil Engineering Construction	Undefined	

FIELD DESCRIPTION	*SUBFIELD DESCRIPTION*
Physical Planning and Construction	Civil Engineering Construction

UNIT STANDARD CODE	*UNIT STANDARD TYPE*	*NQF LEVEL*	*CREDITS*
PPC-CEC-0-SGB CEC	Regular	Level 3	20

Specific Outcomes:

SPECIFIC OUTCOME 1

Plan the execution of the testing.

SPECIFIC OUTCOME 2

Prepare sampled material for testing.

SPECIFIC OUTCOME 3

Execute the laboratory tests.

SPECIFIC OUTCOME 4

Record and store test readings.

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD: 4

Execute sampling of concrete material for testing

SAQA US ID	*UNIT STANDARD TITLE*
116570	Execute sampling of concrete material for testing

SGB NAME	*ABET BAND*	*PROVIDER NAME*
SGB Civil Engineering Construction	Undefined	

FIELD DESCRIPTION	*SUBFIELD DESCRIPTION*
Physical Planning and Construction	Civil Engineering Construction

UNIT STANDARD CODE	*UNIT STANDARD TYPE*	*NQF LEVEL*	*CREDITS*
PPC-CEC-0-SGB CEC	Regular	Level 3	7

Specific Outcomes:

SPECIFIC OUTCOME 1

Determine the number, size and type of samples.

SPECIFIC OUTCOME 2

Prepare for sampling.

SPECIFIC OUTCOME 3

Execute sampling.

SPECIFIC OUTCOME 4

Label containers and transport samples to laboratory.

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD: 5

Execute laboratory testing pertaining to bituminous materials

SAQA US ID	*UNIT STANDARD TITLE*
116576	Execute laboratory testing pertaining to bituminous materials

SGB NAME	*ABET BAND*	*PROVIDER NAME*
SGB Civil Engineering Construction	Undefined	

FIELD DESCRIPTION	*SUBFIELD DESCRIPTION*
Physical Planning and Construction	Civil Engineering Construction

UNIT STANDARD CODE	*UNIT STANDARD TYPE*	*NQF LEVEL*	*CREDITS*
PPC-CEC-0-SGB CEC	Regular	Level 3	10

Specific Outcomes:

SPECIFIC OUTCOME 1

Plan the execution of the testing.

SPECIFIC OUTCOME 2

Prepare sampled material for testing.

SPECIFIC OUTCOME 3

Execute the laboratory tests.

SPECIFIC OUTCOME 4

Record and store test readings.

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD: 6

Execute sampling of asphalt materials for testing

SAQA US ID	*UNIT STANDARD TITLE*
116584	Execute sampling of asphalt materials for testing

SGB NAME	*ABET BAND*	*PROVIDER NAME*
SGB Civil Engineering Construction	Undefined	

FIELD DESCRIPTION	*SUBFIELD DESCRIPTION*
Physical Planning and Construction	Civil Engineering Construction

UNIT STANDARD CODE	*UNIT STANDARD TYPE*	*NQF LEVEL*	*CREDITS*
PPC-CEC-0-SGB CEC	Regular	Level 3	10

Specific Outcomes:

SPECIFIC OUTCOME 1

Determine the number, size and type of samples.

SPECIFIC OUTCOME 2

Prepare for sampling.

SPECIFIC OUTCOME 3

Execute sampling.

SPECIFIC OUTCOME 4

Label containers and transport samples to laboratory.

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD: 7

Execute sampling of aggregate materials for testing

SAQA US ID	*UNIT STANDARD TITLE*
116585	Execute sampling of aggregate materials for testing

SGB NAME	*ABET BAND*	*PROVIDER NAME*
SGB Civil Engineering Construction	Undefined	

FIELD DESCRIPTION	*SUBFIELD DESCRIPTION*
Physical Planning and Construction	Civil Engineering Construction

UNIT STANDARD CODE	*UNIT STANDARD TYPE*	*NQF LEVEL*	*CREDITS*
PPC-CEC-0-SGB CEC	Regular	Level 3	4

Specific Outcomes:

SPECIFIC OUTCOME 1

Determine the number, size and type of samples.

SPECIFIC OUTCOME 2

Prepare for sampling.

SPECIFIC OUTCOME 3

Execute sampling.

SPECIFIC OUTCOME 4

Label containers and transport samples to laboratory.

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD: 8

Execute laboratory testing pertaining to soils and gravels

SAQA US ID	*UNIT STANDARD TITLE*
116586	Execute laboratory testing pertaining to soils and gravels

SGB NAME	*ABET BAND*	*PROVIDER NAME*
SGB Civil Engineering Construction	Undefined	

FIELD DESCRIPTION	*SUBFIELD DESCRIPTION*
Physical Planning and Construction	Civil Engineering Construction

UNIT STANDARD CODE	*UNIT STANDARD TYPE*	*NQF LEVEL*	*CREDITS*
PPC-CEC-0-SGB CEC	Regular	Level 3	20

Specific Outcomes:

SPECIFIC OUTCOME 1

Plan the execution of the testing.

SPECIFIC OUTCOME 2

Prepare sampled material for testing.

SPECIFIC OUTCOME 3

Execute the laboratory tests.

SPECIFIC OUTCOME 4

Record and store test readings.

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD: 9

Execute laboratory testing pertaining to concrete

SAQA US ID	*UNIT STANDARD TITLE*
116588	Execute laboratory testing pertaining to concrete

SGB NAME	*ABET BAND*	*PROVIDER NAME*
SGB Civil Engineering Construction	Undefined	

FIELD DESCRIPTION	*SUBFIELD DESCRIPTION*
Physical Planning and Construction	Civil Engineering Construction

UNIT STANDARD CODE	*UNIT STANDARD TYPE*	*NQF LEVEL*	*CREDITS*
PPC-CEC-0-SGB CEC	Regular	Level 3	25

Specific Outcomes:

SPECIFIC OUTCOME 1

Plan the execution of the testing.

SPECIFIC OUTCOME 2

Prepare sampled material for testing.

SPECIFIC OUTCOME 3

Execute the laboratory tests.

SPECIFIC OUTCOME 4

Record and store test readings.

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD: 10

Execute sampling of bituminous materials for testing

SAQA US ID	*UNIT STANDARD TITLE*
116589	Execute sampling of bituminous materials for testing

SGB NAME	*ABET BAND*	*PROVIDER NAME*
SGB Civil Engineering Construction	Undefined	

FIELD DESCRIPTION	*SUBFIELD DESCRIPTION*
Physical Planning and Construction	Civil Engineering Construction

UNIT STANDARD CODE	*UNIT STANDARD TYPE*	*NQF LEVEL*	*CREDITS*
PPC-CEC-0-SGB CEC	Regular	Level 4	3

Specific Outcomes:

SPECIFIC OUTCOME 1

Determine the number, size and type of samples.

SPECIFIC OUTCOME 2

Prepare for sampling.

SPECIFIC OUTCOME 3

Execute sampling.

SPECIFIC OUTCOME 4

Label containers and transport samples to laboratory.

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

QUALIFICATION:

National Certificate: Construction: Concreting

SAQA QUAL ID	*QUALIFICATION TITLE*	
49016	National Certificate: Construction: Concreting	
SGB NAME	SGB Civil Engineering Construction	
ABET BAND	*PROVIDER NAME*	
Undefined		
QUALIFICATION CODE	*QUAL TYPE*	*SUBFIELD*
PPC-3-National Certificate	National Certificate	Civil Engineering Construction
MINIMUM CREDITS	*NQF LEVEL*	*QUALIFICATION CLASS*
152	Level 3	Regular-Unit Stds Based
SAQA DECISION NUMBER	*REGISTRATION START DATE*	*REGISTRATION END DATE*

PURPOSE OF THE QUALIFICATION

Learners found competent against this qualification will be able to mix and place concrete in a safe, cost effective manner and in compliance with project specifications.

For those who have been in the workplace for a long time, this Qualification can be used in the recognition of prior learning process to assess and recognise workplace skills acquired without the benefit of formal education and training.

For the new entrant, this Qualification describes the learning outcomes required to participate effectively in a structured workplace.

For education and training providers, this Qualification provides guidance for the development of appropriate learning programmes and assessment documentation.

For employers, this Qualification enables skills gaps to be identified and addressed ensuring that productivity levels are increased and business objectives achieved.

This Qualification has been developed to assist with the advancement of the learner across the Civil Engineering and Construction Industry and is aimed at Construction Concreting practitioners in the Industry, ensuring the upliftment of standards in general.

The combination of learning outcomes will provide the qualifying learner with vocational knowledge and skills appropriate to the context of Construction Concreting in the Civil Engineering and Construction environment. It will also equip learners with a foundation for further intellectual development, opportunities for gainful employment and reward for contributions to society.

This Qualification will provide the Industry with qualified Construction Concreting practitioners, thereby facilitating social and economic transformation, empowerment and upliftment in the Industry and country in general.

The relationship between this Qualification and the principles of the NQF is outlined in the following table:

NQF Principle-National Certificate in Construction concreting - NQF Level 3
Recognition of Prior learning-Allows for Recognition of Prior Learning, especially as a means of career advancement
Credibility-Learning Outcomes are a result of consensus by the Industry
Relevance-Consulting workshops indicated a demand for a unit standard based Qualification in Construction Concreting at NQF Level 3
Access-Removes traditional barriers to Higher Education
Articulation/Progression-Forms part of a Learning Pathway for Construction Concreting practitioners,

spanning NQF Levels 1 - 7

Rationale for the Qualification:

This Qualification has been developed for the Construction Concreting occupational area within the Civil Engineering and Construction Industry.

The rationale for the introduction of a unit standards based Qualification in Construction Concreting is to provide a qualification for persons who perform construction concreting activities on Civil Engineering and Construction sites, whether in micro, small, medium or large operations.

In the past many practitioners in the Civil Engineering and Construction area were denied career advancement and possible professional registration. The introduction of a unit standards based National Certificate in Construction: Concreting, will allow learners, both unemployed and employed, to reach their full potential of advancement and will allow for Recognition of Prior Learning.

This qualification will facilitate the development of a professional community of Construction Concreting practitioners.

The competencies contained in this Qualification are essential for social and economic transformation, empowerment and upliftment within the construction concreting environment, whilst simultaneously improving the skills base of the country.

The combination of learning outcomes will provide qualifying learners with applied competence in the integration of general construction site-work and technical competencies, areas of specialisation in construction concreting, first level supervision of construction concreting activities and basic computer literacy.

This Qualification lays the basis for further learning towards the National Certificate in the Supervision of Construction Processes: - NQF Level 4.

Job Role-Purpose
Concrete Technologist-To design and quality assure concrete to ensure that contractors' requirements for optimization and economy are met
Site Planner-Design and plan site, equipment and resources to ensure cost-effectiveness of operations and activities
Buyer-To procure materials in accordance with specified requirements (economy, time and quality)
Site Establisher-Establish site to ensure optimal concreting operations
Storeman-Receive, check, control, store and issue material, stock and equipment and control losses to ensure ready availability of material
Batcher Person (this could be a Concrete Technician who is computer literate, or a labourer)-Measure correct quantities according to instructions
Scraper Operator-Contribute to batching by supplying aggregate from stock pile to weigh batcher
Mixer Operator-Operate mixing equipment to produce concrete
Driver/Operator-Move concrete from mixer to designated points of placing
Supervisor-Ensure concreting operations take place according to plan
Concrete Hand-Place compact, cure and protect concrete
Finishing Hand-Screed, float, trowel and texture surface to required finish
Quality Controller-Sample and test materials (aggregates, cement extenders, ad-mixtures, pigments, water hardeners, release agents) to establish quality, make recommendations (reporting)

Key Work Areas

> Concrete Production
> Concrete Construction
> Concrete Maintenance
> Quality Control

RECOGNIZE PREVIOUS LEARNING?

N

LEARNING ASSUMED TO BE IN PLACE

Learners should have acquired the language competencies of NQF level 2 and mathematical literacy competencies of NQF Level 2, prior to embarking on learning towards this qualification.

Recognition of Prior Learning:

The qualification may be obtained through the process of Recognition of Prior Learning (RPL). Learners who have met the requirements of any unit standard in this qualification may apply for recognition of prior learning to the relevant Education and Training Quality Assurance Body (ETQA), and will be assessed against the assessment criteria and specific outcomes for the relevant unit standard/s. ETQA bodies are responsible to facilitate the implementation of the RPL. The ETQA body registers trained assessors against specific unit standards. Learners are prepared for assessment and assessed against the unit standard by these registered assessors. Moderation and also an appeals process are in place. Learners declared competent against a specific unit standard, receives an ETQA certificate indicating this achievement. This information is also recorded on the National Record Learner Database. (NLRD)

QUALIFICATION RULES

N/A

EXIT LEVEL OUTCOMES

Core
1. Demonstrate an understanding of the Construction Industry and its processes
2. Identify, describe and use concrete and other related material in Civil Engineering Construction.
3. Interpret construction drawings and specifications and calculate construction quantities to develop a work plan
4. Apply productivity and quality principles on a construction site.
5. Demonstrate knowledge of concrete construction technology and basic concrete construction practise when apply concrete materials technology.
6. The properties and characteristics of fresh and hardened concrete, concrete materials and their application in concrete mix design are described.
7. Carry out routine and site tests on raw materials, fresh and hardened concrete and oversee concrete production.

Elective
1. Demonstrate an understanding of and adjust concrete mix design.
2. Supervise the installation of pre-cast concrete elements.
3. Oversee pre-cast concrete production - wet mix.
4. Apply specialised finishes to concrete.
5. Assess appearance, durability and strength of pre-cast elements.
6. Control concrete material quality.
7. Supervise the batching and mixing of concrete by mass using a concrete mixer.
8. Oversee instantly de-moulded pre-cast concrete element production.
9. Supervise underwater concrete
10. Oversee spun pre-cast concrete element production.
11. Operate a personal computer system.

ASSOCIATED ASSESSMENT CRITERIA

Core

1
> The composition, role-players, processes and legislation governing the construction industry's impact on an employee's role as an employee within the industry and how these different elements are to be applied in his/her specific work context to enhance performance and promote career development are identified.
> Health and safety hazards are identified regarding how they contribute to a safe and healthy work environment for self and others
> Measures to mitigate these hazards are identified
> Basic First Aid assistance is rendered to fellow workers in the event of an emergency

2.
> A range of materials used in Civil Engineering Construction are identified.
> The correct methods for selecting and rejecting materials is applied
> The use of these materials in Civil Engineering Construction is demonstrated
> Materials are measured and ordered according to organizational procedures
> Required tools and equipment are identified, selected and maintained
> Work site infrastructures and work areas are set out to meet job requirements and using basic survey equipment.

3.
> Information contained in drawings and specifications is interpreted and applied to construction activities
> Material quantities are calculated for job costings and these calculations are used to develop work plans.

4.
> Activity production and resource costs are measured and reported on and decisions regarding the implementation of productivity improvement measures are made
> Quality management systems and quality improvement processes are implemented.
> Project quality plans are monitored
> Appropriate measures are identified to reduce deviations in accordance with quality improvement processes

5.
> The properties of concrete and the methods used to produce and install concrete in general and specialised structural applications are described

6.
Mathematical practices for sampling and testing the quality of concrete are applyied..
> The characteristics of concrete materials and their affect on the workability and durability of concrete mix are explained.
> Graphic representations of test results are assessed, plotted and produced in accordance with mathematical practices

7.
> Sample portions of fine aggregates in fresh concrete are selected and tested.
> Post-cutting activities are conducted and joints are sealed to prevent ingress of contaminating substances.
> Concrete production and related operations are supervised to ensure that all work is carried out in accordance with health and safety legislation, specifications and industry standards.
> The purpose and procedures for conducting concrete tests are explained,
> Samples of fresh concrete (slump) and concrete cubes are prepared for testing purposes.
> Time and log sheets are maintained and records are completed related to construction processes in accordance with site requirements.

Elective

1.
> The clients brief / specification for the concrete is understood
> The critical criteria for the specification of the concrete is understood and explained in terms of quality of product and cost
> The suitable available concreting materials are identified, and physical properties are obtained or tested to determine suitability

2.
> The planning, preparation, installation and post-installation of re-cast concrete elements Supervising ensuring all work is carried out in accordance with health and safety legislation, specifications and industry standards

3.
> Elements to produce wet mix precast concrete are planned and prepared, the quality of wet mix precast concrete production elements are supervised and monitored and reports are written up

4.
> Shutters for "as struck" finishes are prepared, and the correct textured finishing method to fresh struck and hardened concrete is applied.
> Concrete is protected and cured in accordance with health and safety legislative requirements, specifications and industry standards

5.
> Visual tests are conducted to pre-cast concrete elements and non-conformances is rectifyed in accordance with work place policy

6.

> Appropriate methods for testing pre-cast concrete elements to loading requirements are selected in accordance with testing schedules and/or legislative requirements.
> Schedules for testing the quality of different types of concrete materials are compiled, and non-compliances identified during testing processes is corrected.
> concrete material quality is protected from contamination and records of material quality test results are maintained

7.
> Scales are calibrated and set in accordance with known masses and manufacturer's specifications,
> The batching of materials, the mixing and discharging of concrete and post-mixing operations are supervised to ensure all work is completed in accordance with safety legislation requirements and good housekeeping practices

8.
> to Instantly de-moulded precast concrete production elements are planned and prepared.
> The quality of spun precast concrete production elements are supervised and monitoring and reports are written up.

9.
> The preparing, placing and finishing of concrete placed under water is supervised ensuring all work is carried out in accordance with safety legislative requirements and completed to the required dimensions.

10.
> The The production of spun precast concrete elements is s planned and prepared.
> The quality of spun precast concrete production elements are supervised and monitored and reports are written up.

11.
> Personal computer hardware and software is operated in accordance with software instructions and manufacturer's specifications

Integrated Assessment:

Formative assessments conducted during the learning process will consist of written tests, demonstrations and a number of self-assessments. The purpose of formative assessment is to diagnose learner strengths and weaknesses and to determine readiness for summative assessment.

Summative assessment would consist of written tests and accompanying assignments, case studies and practical demonstrations. Summative assessments would only be conducted once the learner has indicated that he/she is ready to undergo summative assessment.

Before qualifying, learners will be expected to demonstrate competence in a practical situation that integrates the assessment of all specific outcomes, for all Unit Standards.

Integrated assessment provides learners with an opportunity to display an ability to integrate practical performance, actions, concepts and theory across Unit Standards to achieve competence in relation to the purpose of this Qualification.

In particular assessors should check that the learner is able to demonstrate the ability to consider a range of options and make decisions about:

> The quality of the observed practical performance as well as the theory and underpinning knowledge behind it.
> The different methods that can be used by the learner to display thinking and decision making in the demonstration of practical performance.
> Reflexive competencies

INTERNATIONAL COMPARABILITY

New Zealand Qualifications Authority:

The National Certificate in Construction: Concreting was benchmarked against the following New Zealand Qualifications:

> Concrete Construction with strands in Sitework, Pre-Cast Concrete and Placing and Finishing at Levels 2

or 3 and,

> Concrete Construction (Specialist) with strands in Sitework and Pre-Cast Concrete.

The NZ Qualification, Concrete Construction with strands in Sitework, Pre-Cast Concrete and Placing and Finishing at Levels 2 or 3 has been designed with a core compulsory section, which recognises the core skills and knowledge required by industry for concrete construction workers.

This same principle has been applied in the structuring of the Core category of the National Certificate in Construction: Concreting.

The New Zealand qualification has three strands that recognise the specialised concrete skills in sitework, pre-cast concrete and placing and finishing activities.

This same principle has been applied in the structuring of the Elective category of the National Certificate in Construction: Concreting.

The NZ Qualification, Concrete Construction (Specialist) with strands in Sitework and Pre-Cast Concrete, Level 3 is for people wishing to specialise in the concrete construction industry in either sitework or pre-cast concrete construction activities.

The unit standards contained in the Elective category of the National Certificate in Construction: Concreting include competencies for specialisation in sitework or pre-cast construction activities. In addition, this Qualification includes unit standards for the development of First Line Supervisory skills and basic computer literacy.

This approach has not been incorporated in the design of the New Zealand Level 3 qualifications.

National Training Information Service - Australia

A Certificate III in General Construction (Concreting/Steelfixing) is listed. This Certificate is not based on unit standards and is offered as a training course only. Information on course content is accessible if purchased from training providers accredited by the Australian Qualifications Authority.

Scottish Qualifications Authority

No match was found for Level 3 qualifications listed in the Construction and Civil Engineering Services domain.

ARTICULATION OPTIONS

This Qualification will allow learners access to a National Certificate in the Supervision of Construction Processes: Structures.

The learning pathway for Construction Concreting practitioners, consists of the following Qualifications:

NQF Level 1 National Certificate in Construction:
NQF Level 2 National Certificate in Construction:
NQF Level 3 National Certificate in Construction: Concreting
NQF Level 4 National Certificate in the Supervision of Construction Processes:
NQF Level 5 National Diploma in the Management of Civil Engineering Construction Processes
NQF Level 6 National First Degree in Construction Management
NQF Level 7 Professional Degree in Construction Management

Horizontal articulation is possible to the following qualifications at NQF Level 3 since the fundamentals and a large portion of the core is common:

> National Certificate in Construction : Structural Steel Erecting
> National Certificate in Construction : Concrete Reinforcing

MODERATION OPTIONS

Assessment of learner achievements takes place at providers accredited by the relevant body (RSA, 1998b)

for the provision of programmes that result in the outcomes specified for the National Certificate in Construction: Concreting - NQF Level 3.

The relevant ETQA, or other ETQAs who have a Memorandum of Understanding in place with the relevant - ETQA, are responsible for the moderation of learner achievements for those learners who meet the requirements of this Qualification.

Anyone assessing a learner, or moderating the assessment of a learner, against this Qualification must be registered as an assessor with the relevant ETQA. Any institution offering learning that will enable the achievement of this Qualification must be accredited as a provider with the relevant ETQA.

Assessment and moderation of assessment will be overseen by the relevant ETQA according to the ETQA's policies and guidelines for assessment and moderation; in terms of agreements reached around assessment and moderation between ETQA's and in terms of the moderation guideline detailed immediately below.

Moderation must include both internal and external moderation of assessments at exit points of the Qualification, unless ETQA policies specify otherwise. Moderation should also encompass achievement of the competence described both in individual Unit Standards as well as the integrated competence described in the Qualification.

Anyone wishing to be assessed against this Qualification may apply to be assessed by any assessment agency, assessor or provider institution, which is accredited by the relevant ETQA.

CRITERIA FOR THE REGISTRATION OF ASSESSORS

Persons who apply to register as an Assessor for this Qualification, must meet the following criteria:

> A recognized assessor Qualification;
> Compliance with the relevant ETQA's requirements for assessor registration;
> Detailed documentary proof of educational Qualification, subject matter expertise as well as experience gained (Portfolio of Evidence); and
> A minimum of three years practical relevant occupational experience at NQF level 3

NOTES

Demonstrate the ability to integrate the following critical cross-field competencies when applying the general, specialist and basic computer competencies:

Identify and solve problems in which responses display that responsible decisions using critical and creative thinking have been made by:

> Contributing to a safe and healthy work environment for self and others and rendering basic First Aid assistance to fellow workers in the event of an emergency
> Identifying a range of materials used in Civil Engineering Construction and applying the correct methods for selecting and rejecting materials
> Measuring and ordering materials, identifying, selecting and maintaining required tools and equipment
> Working in confined spaces on construction sites and ensuring that all necessary precautions as required by the Occupational Health and Safety Act for the protection of the public and safety of construction workers are adhered to
> Implementing quality management systems and quality improvement processes, implementing and monitoring project quality plans and identifying appropriate measures to reduce deviations in accordance with quality improvement processes
> Applying mathematical practices for sampling and testing the quality of concrete
> Assessing, plotting and producing graphic representations of test results in accordance with mathematical practices
> Selecting and testing sample portions of fine aggregates in fresh concrete
> Supervising concrete production and related operations ensuring all work is carried out in accordance with health and safety legislation, specifications and industry standards
> Supervising the planning, preparation, installation and post-installation of pre-cast concrete elements ensuring all work is carried out in accordance with health and safety legislation, specifications and industry standards
> Planning and preparing to produce wet mix precast concrete elements, supervising production and monitoring the quality of wet mix precast concrete elements and writing up reports
> Conducting visual tests to pre-cast concrete elements and rectifying non-conformances in accordance

with work place policy. Selecting appropriate methods for testing pre-cast concrete elements to load requirements in accordance with testing schedules and/or legislative requirements
> Calibrating and setting scales in accordance with known masses and manufacturer's specifications, supervising the batching of materials, the mixing and discharging of concrete and post-mixing operations ensuring all work is completed in accordance with safety legislation requirements and good housekeeping practices
> Planning and preparing to produce instantly de-moulded precast concrete elements, supervising production and monitoring the quality of spun precast concrete elements and writing up reports
> Planning and preparing to produce spun precast concrete elements, supervising production and monitoring the quality of spun precast concrete elements and writing up reports
> Supervising the preparing, placing and finishing of concrete placed under water ensuring all work is carried out in accordance with safety legislative requirements and completed to the required dimensions

Work effectively with others as a member of a team, group, organisation or community by:

> Contributing to a safe and healthy work environment for self and others and rendering basic First Aid assistance to fellow workers in the event of an emergency
> Working in confined spaces on construction sites ensuring that all necessary precautions as required by the Occupational Health and Safety Act for the protection of the public and safety of construction workers are adhered to
> Measuring and reporting on activity production and resource costs and making decisions regarding the implementation of productivity improvement measures
> Planning and preparing to produce wet mix precast concrete elements, supervising production and monitoring the quality of wet mix precast concrete elements and writing up reports
> Planning and preparing to produce instantly de-moulded precast concrete elements, supervising production and monitoring the quality of spun precast concrete elements and writing up reports
> Planning and preparing to produce spun precast concrete elements, supervising production and monitoring the quality of spun precast concrete elements and writing up reports
> Calibrating and setting scales in accordance with known masses and manufacturer's specifications, supervising the batching of materials, the mixing and discharging of concrete and post-mixing operations ensuring all work is completed in accordance with safety legislation requirements and good housekeeping practices
> Supervising the preparing, placing and finishing of concrete placed under water ensuring all work is carried out in accordance with safety legislative requirements and completed to the required dimensions

Organise and manage oneself and one's activities responsibly and effectively by:

> Identifying how the composition, role-players, processes and legislation governing the construction industry impact on your role as an employee within the industry and how these different elements are to be applied in your specific work context to enhance performance and promote career development
> Maintaining time and log sheets and completing records related to construction processes in accordance with site requirements
> Measuring and reporting on activity production and resource costs and making decisions regarding the implementation of productivity improvement measures
> Planning and preparing to produce wet mix precast concrete elements, supervising production and monitoring the quality of wet mix precast concrete elements and writing up reports
> Planning and preparing to produce instantly de-moulded precast concrete elements, supervising production and monitoring the quality of spun precast concrete elements and writing up reports
> Planning and preparing to produce spun precast concrete elements, supervising production and monitoring the quality of spun precast concrete elements and writing up reports

Collect, analyse and critically evaluate information by:

> Accessing, interpreting and using information from texts to communicate in writing for defined contexts
> Maintaining time and log sheets and completing records related to construction processes in accordance with site requirements
> Calculating material quantities for job costings and using these calculations for developing work plans
> Interpreting and applying information contained in drawings and specifications to construction activities
> Describing the properties of concrete and the methods used to produce and install concrete in general and specialised structural applications
> Describing the properties and characteristics of fresh and hardened concrete; concrete materials and their application in concrete mix design. Applying mathematical practices for sampling and testing the quality of concrete
> Explaining the characteristics of concrete materials and their affect on the workability and durability of

concrete mix. Assessing, plotting and producing graphic representations of test results in accordance with mathematical practices
> Compiling schedules for testing the quality of different types of concrete materials, correcting non-compliances identified during testing processes
> Explaining the purpose and procedures for conducting concrete tests, preparing samples of fresh concrete (slump) and concrete cubes for testing purposes
> Applying keyboard skills accurately entering data for electronic storage and retrieval

Communicate effectively using visual, mathematical and/or language skills in the modes of oral and/or written persuasion by:

> Using, adapting and maintaining oral communication to accommodate audience needs for a range of communicative contexts
> Accessing, interpreting and using information from texts to communicate in writing for defined contexts
> Measuring and reporting on activity production and resource costs and making decisions regarding the implementation of productivity improvement measures
> Implementing quality management systems and quality improvement processes, implementing and monitoring project quality plans and identifying appropriate measures to reduce deviations in accordance with quality improvement processes

Use science and technology effectively and critically, showing responsibility towards the environment and health of others by:

> Setting up work site infrastructures that meet job requirements and setting out work areas using basic survey equipment
> Selecting and testing sample portions of fine aggregates in fresh concrete. Conducting post-cutting activities and sealing joints to prevent ingress of contaminating substances
> Preparing shutters for "as struck" finishes, and applying the correct textured finishing method to fresh struck and hardened concrete. Protecting and curing concrete in accordance with health and safety legislative requirements, specifications and industry standards
> Conducting visual tests to pre-cast concrete elements and rectifying non-conformances in accordance with work place policy. Selecting appropriate methods for testing pre-cast concrete elements to load requirements in accordance with testing schedules and/or legislative requirements
> Compiling schedules for testing the quality of different types of concrete materials, correcting non-compliances identified during testing processes. Protecting concrete material quality from contamination and maintaining records of material quality test results
> Planning and preparing to produce wet mix precast concrete elements, supervising production and monitoring the quality of wet mix precast concrete elements and writing up reports
> Planning and preparing to produce instantly de-moulded precast concrete elements, supervising production and monitoring the quality of spun precast concrete elements and writing up reports
> Planning and preparing to produce spun precast concrete elements, supervising production and monitoring the quality of spun precast concrete elements and writing up reports
> Calibrating and setting scales in accordance with known masses and manufacturer's specifications, supervising the batching of materials, the mixing and discharging of concrete and post-mixing operations ensuring all work is completed in accordance with safety legislation requirements and good housekeeping practices
> Operating personal computer hardware and software in accordance with software instructions and manufacturer's specifications

Demonstrate an understanding of the world as a set of related systems by recognising that problem-solving contexts do not exist in isolation by:

> Identifying how the composition, role-players, processes and legislation governing the construction industry impact on your role as an employee within the industry and how these different elements are to be applied in your specific work context to enhance performance and promote career development.

UNIT STANDARDS
(Note: A blank space after this line means that the qualification is not based on Unit Standards.)

	UNIT STANDARD ID AND TITLE	*LEVEL*	*CREDITS*	*STATUS*
Core	9964 Apply health and safety to a work area	Level 2	3	Reregistered
Core	9965 Render basic first aid	Level 2	3	Registered
Core	9966 Establish and prepare a work area	Level 2	4	Registered

Core	9986 Apply quality principles on a construction project	Level 2	12	Registered
Core	13972 Identify describe and use materials in civil engineering construction	Level 2	4	Registered
Core	14336 Maintain Records For Civil Construction Sites	Level 2	2	Registered
Core	14556 Apply productivity principles on a construction site	Level 2	6	Registered
Core	14557 Conduct routine site tests to fresh and hardened concrete	Level 2	4	Registered
Core	9962 Calculate construction quantities to develop a work plan	Level 3	8	Registered
Core	9968 Procure materials, tools and equipment	Level 3	10	Registered
Core	14580 Read and interpret construction drawings and specifications	Level 3	10	Registered
Core	110095 Describe and interpret the composition role-players processes and role of the construction industry	Level 3	4	Registered
Core	116562 Demonstrate knowledge of and apply basic concrete construction practice	Level 3	10	Draft - Prep for P Comment
Core	15183 Demonstrate knowledge of concrete construction technology	Level 4	10	Registered
Core	116563 Demonstrate knowledge of and apply concrete materials technology	Level 4	10	Registered
Core	116564 Oversee concrete production	Level 4	5	Registered
Core	116571 Carry out routine tests on raw materials for concrete production	Level 4	10	Registered
Elective	7547 Operate a personal computer system	Level 2	6	Reregistered
Elective	15034 Work in confined spaces on construction sites	Level 2	2	Registered
Elective	116559 Apply specialised finishes to concrete	Level 3	7	Draft - Prep for P Comment
Elective	116582 Supervise the batching and mixing of concrete by mass using a concrete mixer	Level 3	5	Draft - Prep for P Comment
Elective	14428 Set out construction work areas	Level 4	10	Registered
Elective	116558 Oversee pre cast concrete production - wet mix	Level 4	5	Registered
Elective	116561 Oversee instantly de-moulded pre cast concrete element production	Level 4	5	Registered
Elective	116572 Control concrete material quality	Level 4	5	Registered
Elective	116574 Assess appearance, durability and strength of precast elements	Level 4	5	Registered
Elective	116579 Supervise installation of precast concrete elements	Level 4	8	Registered
Elective	116580 Oversee spun pre cast concrete element production	Level 4	5	Registered
Elective	116581 Supervise under water concreting	Level 4	4	Registered
Elective	116591 Demonstrate an understanding of and adjust concrete mix design	Level 4	5	Registered
Fundamental	7456 Use mathematics to investigate and monitor the financial aspects of personal, business and national issues	Level 3	2	Registered
Fundamental	8968 Accommodate audience and context needs in oral communication	Level 3	5	Registered
Fundamental	8969 Interpret and use information from texts	Level 3	5	Registered
Fundamental	8970 Write texts for a range of communicative contexts	Level 3	5	Registered
Fundamental	8973 Use language and communication in occupational learning programmes	Level 3	5	Registered
Fundamental	9010 Demonstrate an understanding of the use of different number bases and measurement units and an awareness of error in the context of relevant calculations	Level 3	2	Registered
Fundamental	9012 Investigate life and work related problems using data and probabilities	Level 3	5	Registered
Fundamental	9013 Describe, apply, analyse and calculate shape and motion in 2-and 3-dimensional space in different contexts	Level 3	4	Registered
Fundamental	14086 Work with a wide range of patterns and basic functions and solve related problems	Level 3	3	Registered

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

QUALIFICATION:

National Certificate: Construction: Concrete Reinforcing

SAQA QUAL ID	*QUALIFICATION TITLE*	
49012	National Certificate: Construction: Concrete Reinforcing	
SGB NAME	SGB Civil Engineering Construction	
ABET BAND	*PROVIDER NAME*	
Undefined		
QUALIFICATION CODE	*QUAL TYPE*	*SUBFIELD*
PPC-3-National Certificate	National Certificate	Civil Engineering Construction
MINIMUM CREDITS	*NQF LEVEL*	*QUALIFICATION CLASS*
120	Level 3	Regular-Unit Stds Based
SAQA DECISION NUMBER	*REGISTRATION START DATE*	*REGISTRATION END DATE*

PURPOSE OF THE QUALIFICATION

Learners found competent against this qualification will be able to erect / install concrete reinforcing in a safe, cost effective manner and in compliance with project specifications.

This Qualification is intended to assist all relevant stakeholders and role-players.

For those who have been in the workplace for a long time, this Qualification can be used in the recognition of prior learning process to assess and recognise workplace skills acquired without the benefit of formal education and training.

For the new entrant, this Qualification describes the learning outcomes required to participate effectively in a structured workplace.

For education and training providers, this Qualification provides guidance for the development of appropriate learning programmes and assessment documentation.

For employers, this Qualification enables skills gaps to be identified and addressed ensuring that productivity levels are increased and business objectives achieved.

This Qualification has been developed to assist with the advancement of the learner across the Civil Engineering and Construction Industry and is aimed at Construction Concrete Reinforcing practitioners in the Industry, ensuring the upliftment of standards in general.

The combination of learning outcomes will provide the qualifying learner with vocational knowledge and skills appropriate to the context of Construction Concrete Reinforcing in the Civil Engineering and Construction environment. It will also equip learners with a foundation for further intellectual development, opportunities for gainful employment and reward for contributions to society.

This Qualification will provide the Industry with qualified Construction Concrete Reinforcing practitioners, thereby facilitating social and economic transformation, empowerment and upliftment in the Industry and country in general.

The relationship between this Qualification and the principles of the NQF is outlined in the following:

NQF Principle - National Certificate in Construction: Concrete Re-Inforcing - NQF Level 3

Recognition of Prior learning - Allows for Recognition of Prior Learning, especially as a means of career advancement
Credibility - Learning Outcomes are a result of consensus by the Industry
Relevance - Consulting workshops indicated a demand for a unit standard based Qualification in

Construction Concrete Reinforcing at NQF Level 3
Access - Removes traditional barriers to Higher Education
Articulation/Progression - Forms part of a Learning Pathway for Construction Concrete Reinforcing practitioners, spanning NQF Levels 1 - 7

Rationale for the Qualification:

This Qualification has been developed for the Construction Concrete Reinforcing occupational area within the Civil Engineering and Construction Industry.

The rationale for the introduction of a unit standards based Qualification in Construction Concrete Reinforcing is to provide a qualification for persons who perform construction concrete reinforcing activities on Civil Engineering and Construction sites, whether in micro, small, medium or large operations.

In the past many practitioners in the Civil Engineering and Construction area were denied career advancement and possible professional registration. The introduction of a unit standards based National Certificate in Construction: Concrete Reinforcing, will allow learners, both unemployed and employed, to reach their full potential of advancement and will allow for Recognition of Prior Learning.

This qualification will facilitate the development of a professional community of Construction Concrete Reinforcing practitioners.

The competencies contained in this Qualification are essential for social and economic transformation, empowerment and upliftment within the construction concrete reinforcing environment, whilst simultaneously improving the skills base of the country.

The combination of learning outcomes will provide qualifying learners with applied competence in the integration of general construction site work and technical competencies, areas of specialisation in construction concrete reinforcing, first level supervision of construction concrete reinforcing activities and basic computer literacy.

This Qualification lays the basis for further learning towards the National Certificate in the Supervision of Construction Processes: - NQF Level 4.

RECOGNIZE PREVIOUS LEARNING?

Y

LEARNING ASSUMED TO BE IN PLACE

Learners should have acquired the language competencies of NQF level 2 and mathematical literacy competencies of NQF Level 2, prior to embarking on learning towards this qualification.

Recognition of Prior Learning:

The qualification may be obtained through the process of Recognition of Prior Learning (RPL). Learners who have met the requirements of any unit standard in this qualification may apply for recognition of prior learning to the relevant Education and Training Quality Assurance Body (ETQA), and will be assessed against the assessment criteria and specific outcomes for the relevant unit standard/s. ETQA bodies are responsible to facilitate the implementation of the RPL. The ETQA body registers trained assessors against specific unit standards. Learners are prepared for assessment and assessed against the unit standard by these registered assessors. Moderation and also an appeals process are in place. Learners declared competent against a specific unit standard, receives an ETQA certificate indicating this achievement. This information is also recorded on the National Record Learner Database (NLRD)

QUALIFICATION RULES

Rules of combination:

Fundamental: 36 compulsory
Core: 73 compulsory
Elective: A minimum of 11 credits from list must be taken

Additional Elective Unit Standards could be added to the Qualification over time.

EXIT LEVEL OUTCOMES

On completion of this Qualification learners are able to:

Perform a range of general construction sitework and construction concrete reinforcing activities in the Civil Engineering and Construction context by:

Core Competence:

1. Describe and interpret the composition, role-players, processes, and role of the construction Industry
2. Identify, describe, procure and use materials, tools and equipment in Civil Engineering Construction
3. Establish, set out and prepare a work area.
4. Read and interpret reinforcing materials documentation.
5. Assemble, tie and fix reinforcing cages.
6. Interpret and apply reinforcing drawings
7. Monitor and control cost and production of construction work activities and implement a quality management system.

Elective Competence related to area of specialization.

8. Calculate Construction quantities to develop a work plan.
9. Operate and maintain a steel cutting machine.
10. Tension bonded or unbonded tendons
11. Operate a personal computer system

ASSOCIATED ASSESSMENT CRITERIA

On completion of this Qualification learners are able to:

Perform a range of general construction sitework and construction concrete reinforcing activities in the Civil Engineering and Construction context by:

Core Competence:

1. > The composition, role-players, processes and legislation governing the construction industry impact on his/her role as an employee within the industry and how these different elements are to be applied in his/her specific work context to enhance performance and promote career development are identified.
> Health and safety hazards are identified for a safe and healthy work environment for self and others
> Measures to mitigate hazards are identified
> Basic First Aid assistance is rendered to fellow workers in the event of an emergency

2. > A range of materials used in Civil Engineering Construction are identified.
> The correct methods for selecting and rejecting materials is applied
> Materials are measured and ordered according to organizational procedures
> Required tools and equipment are identified, selected and maintained

3. > Work site infrastructures that meet job requirements is set up and work areas are set out using basic survey equipment
> All necessary precautions for working in confined spaces as required by the Occupational Health and Safety Act for the protection of the public and safety of construction workers are adhered to

4.> The requirements of reinforcing drawings are interpreted to locate and determine reinforcing requirements for structures on-site and plan work sequences.
> Time and log sheets are maintained and records related to construction processes are completed in accordance with site requirements

5. > Reinforcing materials required for the task are identified, prepared for use and stacked for safe and efficient use at the work area.
> Shortages and damaged materials are reported to designated personnel for corrective action
> The erected reinforcing is neat and true within SABS tolerances, and matches all design specifications in accordance with given instructions.

6. > Functions in terms of intended use for reinforcing on a construction site are identified from the drawing descriptions.
> Abbreviations and symbols are identified and explained in accordance with project requirements
> A cutting list is produced in accordance with the Bending Schedule

7. > Activity production and resource costs are measured and reported on.

> Decisions in regard to the implementation of productivity improvement measures are made.
> Quality improvement processes are implemented,
> Project quality plans are implemented and monitored.
> Appropriate measures are identified to reduce deviations in accordance with quality improvement processes.

Elective Competence related to area of specialization.

8. > Material quantities are calculated for job costings
> Calculations are used to develop work plans

9. > Steel cutting and bending machines are operated, maintained and shut-down in accordance with manufacturer's specifications and legislative and workplace safety requirements

10.> Tendons are tensioned to within specified tolerances in accordance with work place procedures and manufacturer's operating procedures
> Post-tensioning operations are carried out in accordance with safety legislation and workplace requirements

11. > Personal computer hardware and software are operated in accordance with software instructions and manufacturer's specifications

Integrated Assessment:

Formative assessments conducted during the learning process will consist of written tests, demonstrations and a number of self-assessments. The purpose of formative assessment is to diagnose learner strengths and weaknesses and to determine readiness for summative assessment.

Summative assessment would consist of written tests and accompanying assignments, case studies and practical demonstrations. Summative assessments would only be conducted once the learner has indicated that he/she is ready to undergo summative assessment.

Before qualifying, learners will be expected to demonstrate competence in a practical situation that integrates the assessment of all specific outcomes, for all Unit Standards.

Integrated assessment provides learners with an opportunity to display an ability to integrate practical performance, actions, concepts and theory across Unit Standards to achieve competence in relation to the purpose of this Qualification.

In particular assessors should check that the learner is able to demonstrate the ability to consider a range of options and make decisions about:

> The quality of the observed practical performance as well as the theory and underpinning knowledge behind it.
> The different methods that can be used by the learner to display thinking and decision making in the demonstration of practical performance.
> Reflexive competencies

INTERNATIONAL COMPARABILITY

New Zealand Qualifications Authority:

The National Certificate in Construction: Concrete Reinforcing was benchmarked against the following New Zealand Qualifications:

> Concrete Construction with strands in Sitework, Pre-Cast Concrete and Placing and Finishing at Levels 2 or 3

> Concrete Construction (Specialist) with strands in Sitework and Pre-Cast Concrete.

The New Zealand Qualification, Concrete Construction with strands in Sitework, Pre-Cast Concrete and Placing and Finishing at Levels 2 or 3 has been designed with a core compulsory section, which recognises the core skills and knowledge required by industry for concrete construction workers.

This same principle has been applied in the structuring of the Core category of the National Certificate in

Construction: Concrete Reinforcing.

The New Zealand qualification has three strands that recognise the specialised concrete skills in sitework, pre-cast concrete and placing and finishing activities.

This same principle has been applied in the structuring of the Elective category of the National Certificate in Construction: Concrete Reinforcing.

The New Zealand Qualification, Concrete Construction (Specialist) with strands in Sitework and Pre-Cast Concrete, Level 3 is for people wishing to specialise in the concrete construction industry in either sitework or pre-cast concrete construction activities.

The unit standards contained in the Elective category of the National Certificate in Construction: Concrete Reinforcing include competencies for specialisation in sitework or construction concrete reinforcing activities. In addition, this Qualification includes unit standards for the development of First Line Supervisory skills and basic computer literacy.

This approach has not been incorporated in the design of the New Zealand Level 3 qualifications.

National Training Information Service - Australia

A training package "General Construction" is listed on the NTIS (Australia) database. The following Unit of Competency is linked to this training package: "Apply reinforcement schedule".

The following Specific Outcomes are contained in this Unit of Competency:

1. Plan and prepare for concrete construction
2. Read and interpret schedule
3. Check contents of identified bundles
4. Locate reinforcement for element construction

Critical aspects of evidence are listed as:

> Demonstrate compliance with Occupational Health and Safety regulations applicable to workplace operations
> Apply organisational quality procedures and processes within the context of constructing reinforced concrete
> Identify coding and numbering related to a reinforcement schedule
> Identify structural details of reinforced concrete elements
> Use safe and effective procedures to handle materials
> Identify relevant drawings and specifications
> Interactively communicate with others to ensure effective operations

Pre-Requisite Relationship of Units are listed as:

> Read and interpret plans
> Carry out steel fixing
> Carry out concrete work

These competencies are incorporated in the Core and Elective categories of the National Certificate in Construction: Concrete Reinforcing.

Scottish Qualifications Authority

No match was found for Level 3 qualifications listed in the Construction and Civil Engineering Services domain.

ARTICULATION OPTIONS

This Qualification will allow learners access to a National Certificate in the Supervision of Construction Processes:.

The learning pathway for Construction Concrete Reinforcing practitioners, consists of the following Qualifications:

NQF Level 1 National Certificate in Construction:
NQF Level 2 National Certificate in Construction:
NQF Level 3 National Certificate in Construction: Concrete Reinforcing
NQF Level 4 National Certificate in the Supervision of Construction Processes:
NQF Level 5 National Diploma in the Management of Civil Engineering
Construction Processes
NQF Level 6 National First Degree in Construction Management
NQF Level 7 Professional Degree in Construction Management

Horizontal articulation is possible to the following qualifications at NQF Level 3 since the fundamentals and a large portion of the core is common:

> National Certificate in Construction : Concreting
> National Certificate in Construction : Structural Steel Erecting

Learners who have successfully demonstrated applied competence in this Qualification will be equipped with a foundation for further intellectual development, opportunities for gainful employment and reward for contributions to society.

MODERATION OPTIONS

Assessment of learner achievements takes place at providers accredited by the relevant body (RSA, 1998b) for the provision of programmes that result in the outcomes specified for the National Certificate in Construction: Concrete Reinforcing - NQF Level 3.

The relevan, or other ETQAs who have a Memorandum of Understanding in place with the relevant - ETQA, are responsible for the moderation of learner achievements for those learners who meet the requirements of this Qualification.

Anyone assessing a learner, or moderating the assessment of a learner, against this Qualification must be registered as an assessor with the relevant ETQA. Any institution offering learning that will enable the achievement of this Qualification must be accredited as a provider with the relevant ETQA.

Assessment and moderation of assessment will be overseen by the relevant ETQA according to the ETQA's policies and guidelines for assessment and moderation; in terms of agreements reached around assessment and moderation between ETQA's and in terms of the moderation guideline detailed immediately below.

Moderation must include both internal and external moderation of assessments at exit points of the Qualification, unless ETQA policies specify otherwise. Moderation should also encompass achievement of the competence described both in individual Unit Standards as well as the integrated competence described in the Qualification.

Anyone wishing to be assessed against this Qualification may apply to be assessed by any assessment agency, assessor or provider institution, which is accredited by the relevant ETQA.

CRITERIA FOR THE REGISTRATION OF ASSESSORS

Persons who apply to register as an Assessor for this Qualification, must meet the following criteria:

> A recognized assessor Qualification
> Compliance with the relevant ETQA's requirements for assessor registration
> Detailed documentary proof of educational Qualification, subject matter expertise as well as experience gained (Portfolio of Evidence)
> A minimum of three years practical relevant occupational experience at NQF level 3

NOTES

Demonstrate the ability to integrate the following critical cross-field competencies when performing a range of general construction sitework and concrete reinforcing activities in the Civil Engineering and Construction context by:

Identify and solve problems in which responses display that responsible decisions using critical and creative thinking have been made by:

> Contributing to a safe and healthy work environment for self and others and rendering basic First Aid assistance to fellow workers in the event of an emergency
> Identifying a range of materials used in Civil Engineering Construction and applying the correct methods for selecting and rejecting materials
> Measuring and ordering materials, identifying, selecting and maintaining required tools and equipment
> Working in confined spaces on construction sites and ensuring that all necessary precautions as required by the Occupational Health and Safety Act for the protection of the public and safety of construction workers are adhered to
> Implementing quality management systems and quality improvement processes, implementing and monitoring project quality plans and identifying appropriate measures to reduce deviations in accordance with quality improvement processes

Work effectively with others as a member of a team, group, organisation or community by:

> Contributing to a safe and healthy work environment for self and others and rendering basic First Aid assistance to fellow workers in the event of an emergency
> Supervising the procurement, receipt, use and storage of construction materials in accordance with site procedures, safety and manufacturer specifications
> Working in confined spaces on construction sites ensuring that all necessary precautions as required by the Occupational Health and Safety Act for the protection of the public and safety of construction workers are adhered to
> Measuring and reporting on activity production and resource costs and making decisions regarding the implementation of productivity improvement measures

Organise and manage oneself and one's activities responsibly and effectively by:

> Identifying how the composition, role-players, processes and legislation governing the construction industry impact on your role as an employee within the industry and how these different elements are to be applied in your specific work context to enhance performance and promote career development
> Maintaining time and log sheets and completing records related to construction processes in accordance with site requirements
> Measuring and reporting on activity production and resource costs and making decisions regarding the implementation of productivity improvement measures

Collect, analyse and critically evaluate information by:

> Accessing, interpreting and using information from texts to communicate in writing for defined contexts
> Maintaining time and log sheets and completing records related to construction processes in accordance with site requirements
> Reading and interpreting abbreviations and symbols contained in reinforcing materials documentation and determining the types and quantities of reinforcing materials required for construction projects
> Calculating material quantities for job costings and using these calculations for developing work plans
> Applying keyboard skills and accurately entering data for electronic storage and retrieval

Communicate effectively using visual, mathematical and/or language skills in the modes of oral and/or written persuasion by:

> Using, adapting and maintaining oral communication to accommodate audience needs for a range of communicative contexts
> Accessing, interpreting and using information from texts to communicate in writing for defined contexts
> Supervising the procurement, receipt, use and storage of construction materials in accordance with site procedures, safety and manufacturer specifications
> Measuring and reporting on activity production and resource costs and making decisions regarding the implementation of productivity improvement measures
> Implementing quality management systems and quality improvement processes, implementing and monitoring project quality plans and identifying appropriate measures to reduce deviations in accordance with quality improvement processes

Use science and technology effectively and critically, showing responsibility towards the environment and health of others by:

> Setting up work site infrastructures that meet job requirements and setting out work areas using basic survey equipment
> Operating, maintaining and shutting-down steel cutting and bending machines in accordance with

manufacturer's specifications and legislative and workplace safety requirements
> Assembling and tie-ing reinforcing cages and using the correct materials and methods for fixing reinforcing in a safe and efficient manner
> Tensioning bonded and unbonded tensions to within specified tolerances and carrying out post-tensioning operations in accordance with safety legislation and workplace requirements
> Operating personal computer hardware and software in accordance with software instructions and manufacturer's specifications

Demonstrate an understanding of the world as a set of related systems by recognising that problem-solving contexts do not exist in isolation by:

Identifying how the composition, role-players, processes and legislation governing the construction industry impact on your role as an employee within the industry and how these different elements are to be applied in your specific work context to enhance performance and promote career development

UNIT STANDARDS
(Note: A blank space after this line means that the qualification is not based on Unit Standards.)

	UNIT STANDARD ID AND TITLE	*LEVEL*	*CREDITS*	*STATUS*
Core	9964 Apply health and safety to a work area	Level 2	3	Reregistered
Core	9965 Render basic first aid	Level 2	3	Registered
Core	9966 Establish and prepare a work area	Level 2	4	Registered
Core	13972 Identify describe and use materials in civil engineering construction	Level 2	4	Registered
Core	14336 Maintain Records For Civil Construction Sites	Level 2	2	Registered
Core	15034 Work in confined spaces on construction sites	Level 2	2	Registered
Core	116573 Assemble, tie and fix reinforcing cages	Level 2	3	Draft - Prep for P Comment
Core	116578 Read and interpret reinforcing materials documentation	Level 2	3	Draft - Prep for P Comment
Core	9968 Procure materials, tools and equipment	Level 3	10	Registered
Core	110095 Describe and interpret the composition role-players processes and role of the construction industry	Level 3	4	Registered
Core	14416 Implement a quality management system, project quality plan and a quality improvement process on a construction project	Level 4	10	Registered
Core	14418 Monitor and control cost and production of construction work activities and implement productivity improvements	Level 4	12	Registered
Core	14428 Set out construction work areas	Level 4	10	Registered
Core	116556 Interpret and apply reinforcing drawings	Level 4	5	Registered
Elective	7547 Operate a personal computer system	Level 2	6	Reregistered
Elective	9962 Calculate construction quantities to develop a work plan	Level 3	8	Registered
Elective	116566 Operate and maintain a steel cutting machine	Level 3	5	Draft - Prep for P Comment
Elective	116569 Operate and maintain a steel bending machine	Level 3	5	Draft - Prep for P Comment
Elective	116592 Tension bonded tendons	Level 4	10	Registered
Elective	116593 Tension unbonded tendons	Level 4	10	Registered
Fundamental	7456 Use mathematics to investigate and monitor the financial aspects of personal, business and national issues	Level 3	2	Registered
Fundamental	8968 Accommodate audience and context needs in oral communication	Level 3	5	Registered
Fundamental	8969 Interpret and use information from texts	Level 3	5	Registered
Fundamental	8970 Write texts for a range of communicative contexts	Level 3	5	Registered
Fundamental	8973 Use language and communication in occupational learning programmes	Level 3	5	Registered
Fundamental	9010 Demonstrate an understanding of the use of different number bases and measurement units and an awareness of error in the context of relevant calculations	Level 3	2	Registered
Fundamental	9012 Investigate life and work related problems using data and probabilities	Level 3	5	Registered
Fundamental	9013 Describe, apply, analyse and calculate shape and motion in 2-and 3-dimensional space in different contexts	Level 3	4	Registered
Fundamental	14086 Work with a wide range of patterns and basic functions and solve related problems	Level 3	3	Registered

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

QUALIFICATION:

National Certificate: Construction: Structural Steel Erecting

SAQA QUAL ID	*QUALIFICATION TITLE*	
49015	National Certificate: Construction: Structural Steel Erecting	
SGB NAME	SGB Civil Engineering Construction	
ABET BAND	*PROVIDER NAME*	
Undefined		
QUALIFICATION CODE	*QUAL TYPE*	*SUBFIELD*
PPC-3-National Certificate	National Certificate	Civil Engineering Construction
MINIMUM CREDITS	*NQF LEVEL*	*QUALIFICATION CLASS*
153	Level 3	Regular-Unit Stds Based
SAQA DECISION NUMBER	*REGISTRATION START DATE*	*REGISTRATION END DATE*

PURPOSE OF THE QUALIFICATION

Learners found competent against this qualification will be able to erect structural steel in a safe, cost effective manner and in compliance with project specifications.

For those who have been in the workplace for a long time, this Qualification can be used in the recognition of prior learning process to assess and recognise workplace skills acquired without the benefit of formal education and training.

For the new entrant, this Qualification describes the learning outcomes required to participate effectively in a structured workplace.

For education and training providers, this Qualification provides guidance for the development of appropriate learning programmes and assessment documentation.

For employers, this Qualification enables skills gaps to be identified and addressed ensuring that productivity levels are increased and business objectives achieved.

This Qualification has been developed to assist with the advancement of the learner across the Civil Engineering and Construction industry and is aimed at Construction Structural Steel Erecting practitioners in the industry, ensuring the upliftment of standards in general.

The combination of learning outcomes will provide the qualifying learner with vocational knowledge and skills appropriate to the context of Structural Steel Erecting in the Civil Engineering and Construction environment. It will also equip learners with a foundation for further intellectual development, opportunities for gainful employment and reward for contributions to society.

This Qualification will provide the industry with qualified Construction Structural Steel Erecting practitioners, thereby facilitating social and economic transformation, empowerment and upliftment in the Industry and country in general.

The relationship between this Qualification and the principles of the NQF is outlined in the following table:

NQF Principle-national certificate in construction concreting - nqf level 3
Recognition of Prior learning-Allows for Recognition of Prior Learning, especially as a means of career advancement
Credibility-Learning Outcomes are a result of consensus by the Industry
Relevance-Consulting workshops indicated a demand for a unit standard based Qualification in Construction Structural Steel Erecting at NQF Level 3
Access-Removes traditional barriers to Higher Education
Articulation/Progression-Forms part of a Learning Pathway for Construction Structural Steel Erecting

practitioners, spanning NQF Levels 1 - 7

Rationale for the Qualification:

This Qualification has been developed for the Construction Structural Steel Erecting occupational area within the Civil Engineering and Construction Industry.

The rationale for the introduction of a unit standards based Qualification in Construction Structural Steel Erecting is to provide a qualification for persons who perform structural steel erecting activities on Civil Engineering and Construction sites, whether in micro, small, medium or large operations.

In the past many practitioners in the Civil Engineering and Construction area were denied career advancement and possible professional registration. The introduction of a unit standards based National Certificate in Construction: Structural Steel Erecting, will allow learners, both unemployed and employed, to reach their full potential of advancement and will allow for Recognition of Prior Learning.

This qualification will facilitate the development of a professional community of Construction Structural Steel Erecting practitioners.

The competencies contained in this Qualification are essential for social and economic transformation, empowerment and upliftment within the Construction Structural Steel Erecting environment, whilst simultaneously improving the skills base of the country.

The combination of learning outcomes will provide qualifying learners with applied competence in the integration of general construction site-work and technical competencies, first level supervisory and basic computer literacy skills.

This Qualification lays the basis for further learning towards the National Certificate in the Supervision of Construction Processes: - NQF Level 4.

Typical job roles and purpose

Job Role-Purpose
Construction Supervisor-The construction supervisor is responsible for overseeing the entire structural steel erecting operation
Steel Erector-The steel erector oversees all tasks and activities carried out by the Ground, Connecting and Fixing crews
Yardman-The Yardman receives components and consumable items into the yard. He is responsible for laying out components and selecting the correct components when these are required at the job site
Slinger-Assembles structural steel components into larger units for lifting and erecting
Connector-Receives structural steel components at heights above ground level and secures these components into the building to a stage where they are safe and secure and ready for permanent fastening by means of bolting or welding.
Fixer-The fixer is responsible for checking the alignment of the building and completes the permanent fastening to structural steel components by way of bolting and welding applications.
Rigger-The rigger is responsible for setting up specialised lifting equipment for abnormal loads i.e. loads that are too large, or too heavy to be lifted by means of conventional lifting equipment

Key Work Areas
> Receive, lay out, select and make available structural steel components on site
> Assemble structural steel components for lifting and erection
> Connect erected structural steel components
> Permanently fix erected structural steel components

RECOGNIZE PREVIOUS LEARNING?

Y

LEARNING ASSUMED TO BE IN PLACE

Learners should have acquired the language competencies of NQF level 2 and mathematical literacy competencies of NQF Level 2, prior to embarking on learning towards this qualification.

Recognition of Prior Learning:

The qualification may be obtained through the process of Recognition of Prior Learning (RPL). Learners

who have met the requirements of any unit standard in this qualification may apply for recognition of prior learning to the relevant Education and Training Quality Assurance Body (ETQA), and will be assessed against the assessment criteria and specific outcomes for the relevant unit standard/s. ETQA bodies are responsible to facilitate the implementation of the RPL. The ETQA body registers trained assessors against specific unit standards. Learners are prepared for assessment and assessed against the unit standard by these registered assessors. Moderation and also an appeals process are in place. Learners declared competent against a specific unit standard, receives an ETQA certificate indicating this achievement. This information is also recorded on the National Record Learner Database. (NLRD)

QUALIFICATION RULES

All the unit standards from the fundamental and core category must be taken plus a minimum of 8 credits from the elective list of unit standards in order to obtain 153 credits - the minimum for this qualification

Supplementary Information:

1. Acts, Regulations, Specifications and Standards applicable to this qualification:
> Occupational Health and Safety Act 1993.
> GNR 1010 of 18 July 2003: Construction Regulations 2003.
> South African Bureau of Standards.
> National Building Regulations.
> Industry Project Specifications: (included but not limited to)
COTO Standard specifications (Committee of Transport officials)
National Department of Public Works.

EXIT LEVEL OUTCOMES

On completion of this Qualification learners are able to:

Perform a range of general construction sitework and structural steel erecting activities in the Civil Engineering and Construction context by:

Core Competence:

1. Describe and interpret the composition, role-players, processes, and role of the construction Industry.
2. Supervise Health and Safety and render basic first aid on a construction site.
3. Establish, set out and prepare a work area
4. Read and interpret construction drawings and specifications, and procure materials, tools and equipment.
5. Monitor and control cost and production, and apply quality principles on a construction project.
6. Plan and prepare the erection of structural steelwork
7. Lift and position loads
8. Finish off and hand over structural works

Elective Competence related to area of specialization.

1. Calculate construction quantities to develop a work plan.
2. Supervise the procurement, use and storage of construction materials.
3. Lead and supervise construction teams.
4. Work in confined spaces on a construction site.
5. Perform tandem lifting.
6. Supervise the installation of pre-cast concrete elements.
7. Operate a personal computer system.

Demonstrate the ability to integrate the following critical cross-field competencies when performing a range of general construction sitework and structural steel erecting activities in the Civil Engineering and Construction context by:

Identify and solve problems in which responses display that responsible decisions using critical and creative thinking have been made by:
> Rendering basic First Aid assistance to fellow workers in the event of an emergency
> Developing, implementing and monitoring a Health and Safety site plan, identifying specific hazards related to the construction environment and supervising the implementation of steps to limit damage to persons and property, identifying and applying procedures for the prevention of the spread of transmittable diseases
> Measuring and ordering materials, identifying, selecting and maintaining required tools and equipment
> Implementing quality management systems and quality improvement processes, implementing and

monitoring project quality plans and identifying appropriate measures to reduce deviations in accordance with quality improvement processes
> Planning and preparing for the erection of structural steelwork ensuring all work is carried out in accordance with safety legislation requirements and completed to industry accepted standards
> Implementing road side safety procedures and controlling traffic during road construction and road maintenance activities in accordance with safety legislation requirements and project specifications
> Lifting, positioning and securing loads in accordance with safety legislation requirements and industry procedures for work conducted at heights well above ground level
> Finishing off structural work, dismantling structures and handing over completed structures in accordance with safety legislation and industry procedures
> Procuring labour, monitoring the performance of team members including disciplinary action and providing on-job training and coaching
> Setting up cranes and lifting loads in tandem in accordance with safety legislation requirements and standard industry procedures
> Working in confined spaces on construction sites and ensuring that all necessary precautions as required by the Occupational Health and Safety Act for the protection of the public and safety of construction workers are adhered to
> Supervising the planning, preparation, installation and post-installation of pre-cast concrete elements ensuring all work is carried out in accordance with health and safety legislation, specifications and industry standards

Work effectively with others as a member of a team, group, organisation or community by:
> Rendering basic First Aid assistance to fellow workers in the event of an emergency
> Developing, implementing and monitoring a Health and Safety site plan, identifying specific hazards related to the construction environment and supervising the implementation of steps to limit damage to persons and property, identifying and applying procedures for the prevention of the spread of transmittable diseases
> Planning and preparing for the erection of structural steelwork ensuring all work is carried out in accordance with safety legislation requirements and completed to industry accepted standards
> Implementing road side safety procedures and controlling traffic during road construction and road maintenance activities in accordance with safety legislation requirements and project specifications
> Lifting, positioning and securing loads in accordance with safety legislation requirements and industry procedures for work conducted at heights well above ground level
> Supervising the procurement, receipt, use and storage of construction materials in accordance with site procedures, safety and manufacturer specifications
> Working in confined spaces on construction sites ensuring that all necessary precautions as required by the Occupational Health and Safety Act for the protection of the public and safety of construction workers are adhered to
> Measuring and reporting on activity production and resource costs and making decisions regarding the implementation of productivity improvement measures

Organise and manage oneself and one's activities responsibly and effectively by:
> Identifying how the composition, role-players, processes and legislation governing the construction industry impact on your role as an employee within the industry and how these different elements are to be applied in your specific work context to enhance performance and promote career development
> Measuring and reporting on activity production and resource costs and making decisions regarding the implementation of productivity improvement measures
> Planning and preparing for the erection of structural steelwork ensuring all work is carried out in accordance with safety legislation requirements and completed to industry accepted standards
> Procuring labour, monitoring the performance of team members including disciplinary action and providing on-job training and coaching

Collect, analyse and critically evaluate information by:
> Accessing, interpreting and using information from texts to communicate in writing for defined contexts
> Interpreting and applying information contained in drawings and specifications to construction activities
> Developing, implementing and monitoring a Health and Safety site plan, identifying specific hazards related to the construction environment and supervising the implementation of steps to limit damage to persons and property, identifying and applying procedures for the prevention of the spread of transmittable diseases
> Implementing road side safety procedures and controlling traffic during road construction and road maintenance activities in accordance with safety legislation requirements and project specifications
> Finishing off structural work, dismantling structures and handing over completed structures in accordance with safety legislation and industry procedures
> Applying keyboard skills accurately entering data for electronic storage and retrieval

Communicate effectively using visual, mathematical and/or language skills in the modes of oral and/or written persuasion by:
> Using, adapting and maintaining oral communication to accommodate audience needs for a range of communicative contexts
> Accessing, interpreting and using information from texts to communicate in writing for defined contexts
> Measuring and reporting on activity production and resource costs and making decisions regarding the implementation of productivity improvement measures
> Implementing quality management systems and quality improvement processes, implementing and monitoring project quality plans and identifying appropriate measures to reduce deviations in accordance with quality improvement processes
> Developing, implementing and monitoring a Health and Safety site plan, identifying specific hazards related to the construction environment and supervising the implementation of steps to limit damage to persons and property, identifying and applying procedures for the prevention of the spread of transmittable diseases
> Implementing road side safety procedures and controlling traffic during road construction and road maintenance activities in accordance with safety legislation requirements and project specifications
> Lifting, positioning and securing loads in accordance with safety legislation requirements and industry procedures for work conducted at heights well above ground level
> Finishing off structural work, dismantling structures and handing over completed structures in accordance with safety legislation and industry procedures
> Setting up cranes and lifting loads in tandem in accordance with safety legislation requirements and standard industry procedures

Use science and technology effectively and critically, showing responsibility towards the environment and health of others by:
> Setting up work site infrastructures that meet job requirements and setting out work areas using basic survey equipment
> Developing, implementing and monitoring a Health and Safety site plan, identifying specific hazards related to the construction environment and supervising the implementation of steps to limit damage to persons and property, identifying and applying procedures for the prevention of the spread of transmittable diseases
> Planning and preparing for the erection of structural steelwork ensuring all work is carried out in accordance with safety legislation requirements and completed to industry accepted standards
> Implementing road side safety procedures and controlling traffic during road construction and road maintenance activities in accordance with safety legislation requirements and project specifications
> Lifting, positioning and securing loads in accordance with safety legislation requirements and industry procedures for work conducted at heights well above ground level
> Finishing off structural work, dismantling structures and handing over completed structures in accordance with safety legislation and industry procedures
> Setting up cranes and lifting loads in tandem in accordance with safety legislation requirements and standard industry procedures
> Supervising the planning, preparation, installation and post-installation activities associated with pre-cast concrete elements ensuring all work is carried out in accordance with health and safety legislation, specifications and industry standards
> Operating personal computer hardware and software in accordance with software instructions and manufacturer's specifications

Demonstrate an understanding of the world as a set of related systems by recognising that problem-solving contexts do not exist in isolation by:
> Identifying how the composition, role-players, processes and legislation governing the construction industry impact on your role as an employee within the industry and how these different elements are to be applied in your specific work context to enhance performance and promote career development
> Developing, implementing and monitoring a Health and Safety site plan, identifying specific hazards related to the construction environment and supervising the implementation of steps to limit damage to persons and property, identifying and applying procedures for the prevention of the spread of transmittable diseases
> Implementing road side safety procedures and controlling traffic during road construction and road maintenance activities in accordance with safety legislation requirements and project specifications

ASSOCIATED ASSESSMENT CRITERIA

Core Competence:

1.

The composition, role-players, processes and legislation governing the construction industry impact on his/her role as an employee within the industry and how these different elements are to be applied in his/her specific work context to enhance performance and promote career development are identified.

2.
> Visible vital signs of the injured person are examined.
> Universal principles for dealing with infectious diseases are applied.
> Serious bleeding is controlled using the most appropriate method.
> Signs that indicate shock are accurately identified and correct treatment applied.
> Health and Safety site plan are developed, implemented and monitored
> Specific hazards related to the construction environment are identified.
> The implementation of steps to limit damage to persons and property is supervised.
> Procedures for the prevention of the spread of transmittable diseases are applied.
> Basic first aid is administered.

3.
> Work site infrastructures that meet job requirements are set up.
> Set out principles are explained.
> Reference and control systems are established.
> Works are set out using tapes, spirit level, theodolite in accordance to survey information and drawings.

4.
> Materials are measured and ordered according to organizational policies.
> Required tools and equipment are identified, selected and maintained.
> Information contained in drawings and specifications is interpreted and applyied to construction activities

5.
> Activity production and resource costs are measured and reported on.
> Decisions regarding the implementation of productivity improvement measures are made
> Quality management systems and quality improvement processes are implemented
> Project quality plans are implemented and monitored.
> Appropriate measures to reduce deviations in accordance with quality improvement processes are identified.

6.
> Drawings, specifications and attendant technical lists for the assembly of structural steel components are correctly interpreted
> Steel components are prepared for erection in accordance with technical specifications
> Work is carried out in accordance with safety legislation requirements and completed to industry accepted standards

7.
> Lifting, positioning and securing loads is done in accordance with safety legislation requirements and industry procedures for work conducted at heights well above ground level

8.
> Structural work is finished off, structures are dismantled and completed structures are handed over in accordance with safety legislation and industry procedures

Elective Competence related to area of specialization.

1.
> Material quantities for job costings are calculated and work plans are developed

2.
> The procurement, receipt, use and storage of construction materials is supervised in accordance with site procedures, safety, manufacturer and project specifications

3.
> Labour resource schedule is developed in accordance with works programme.
> Team members are recruited, selected and inducted.
> Teams are motivated and their performance is monitored.

4.

All necessary precautions as required by the Occupational Health and Safety Act for the protection of the public and safety of construction workers are adhered to.

5.
> Cranes are set up and loads are lifted in tandem in accordance with safety legislation requirements and standard industry procedures

6.
> Preparation, installation and post-installation activities associated with pre-cast concrete elements is carried out in accordance with health and safety legislation, specifications and industry standards

7.
> Personal computer hardware and software are operated in accordance with software instructions and manufacturer's specifications.

Integrated Assessment:

Formative assessments conducted during the learning process will consist of written tests, demonstrations and a number of self-assessments. The purpose of formative assessment is to diagnose learner strengths and weaknesses and to determine readiness for summative assessment.

Summative assessment would consist of written tests and accompanying assignments, case studies and practical demonstrations. Summative assessments would only be conducted once the learner has indicated that he/she is ready to undergo summative assessment.

Before qualifying, learners will be expected to demonstrate competence in a practical situation that integrates the assessment of all specific outcomes, for all Unit Standards.

Integrated assessment provides learners with an opportunity to display an ability to integrate practical performance, actions, concepts and theory across Unit Standards to achieve competence in relation to the purpose of this Qualification.

In particular assessors should check that the learner is able to demonstrate the ability to consider a range of options and make decisions about:

> The quality of the observed practical performance as well as the theory and underpinning knowledge behind it.
> The different methods that can be used by the learner to display thinking and decision making in the demonstration of practical performance.
> Reflexive competencies

INTERNATIONAL COMPARABILITY

Scottish Qualifications Framework:

The qualification has been benchmarked against the SVQ qualification, Construction: Access Operation and Rigging, Level 3. Of the competencies contained in the international qualification, the following similar competencies are incorporated in the National Certificate in Construction: Structural Steel Erecting, NQF Level 3:

> Assist with the organisation of resources
> Contribute to establishing the operational area
> Contribute to the progress of operations

ARTICULATION OPTIONS

This Qualification will allow learners access to a National Certificate in the Supervision of Construction Processes

MODERATION OPTIONS

Assessment of learner achievements takes place at providers accredited by the relevant body (RSA, 1998b) for the provision of programmes that result in the outcomes specified for the National Certificate in Construction: Structural Steel Erecting - NQF Level 3.

The relevant ETQA, or other ETQAs who have a Memorandum of Understanding in place with the relevant -

ETQA, are responsible for the moderation of learner achievements for those learners who meet the requirements of this Qualification.

Anyone assessing a learner, or moderating the assessment of a learner, against this Qualification must be registered as an assessor with the relevant ETQA. Any institution offering learning that will enable the achievement of this Qualification must be accredited as a provider with the relevant ETQA.

Assessment and moderation of assessment will be overseen by the relevant ETQA according to the ETQA's policies and guidelines for assessment and moderation; in terms of agreements reached around assessment and moderation between ETQA's and in terms of the moderation guideline detailed immediately below.

Moderation must include both internal and external moderation of assessments at exit points of the Qualification, unless ETQA policies specify otherwise. Moderation should also encompass achievement of the competence described both in individual Unit Standards as well as the integrated competence described in the Qualification.

Anyone wishing to be assessed against this Qualification may apply to be assessed by any assessment agency, assessor or provider institution, which is accredited by the relevant ETQA.

CRITERIA FOR THE REGISTRATION OF ASSESSORS

Persons who apply to register as an Assessor for this Qualification, must meet the following criteria:

> A recognized assessor Qualification;
> Compliance with the relevant ETQA's requirements for assessor registration;
> Detailed documentary proof of educational Qualification, subject matter expertise as well as experience gained (Portfolio of Evidence); and
> A minimum of three years practical relevant occupational experience at NQF level 3

NOTES

N/A

UNIT STANDARDS
(Note: A blank space after this line means that the qualification is not based on Unit Standards.)

	UNIT STANDARD ID AND TITLE	LEVEL	CREDITS	STATUS
Core	9965 Render basic first aid	Level 2	3	Registered
Core	9966 Establish and prepare a work area	Level 2	4	Registered
Core	9986 Apply quality principles on a construction project	Level 2	12	Registered
Core	9968 Procure materials, tools and equipment	Level 3	10	Registered
Core	14580 Read and interpret construction drawings and specifications	Level 3	10	Registered
Core	110095 Describe and interpret the composition role-players processes and role of the construction industry	Level 3	4	Registered
Core	116577 Finish off and hand over structural works	Level 3	12	Registered
Core	116622 Lift and position loads	Level 3	12	Registered
Core	14418 Monitor and control cost and production of construction work activities and implement productivity improvements	Level 4	12	Registered
Core	14428 Set out construction work areas	Level 4	10	Registered
Core	14429 Supervise health and safety on a construction project	Level 4	6	Registered
Core	116615 Plan and prepare for the erection of structural steelwork	Level 4	16	Registered
Elective	7547 Operate a personal computer system	Level 2	6	Reregistered
Elective	15034 Work in confined spaces on construction sites	Level 2	2	Registered
Elective	9962 Calculate construction quantities to develop a work plan	Level 3	8	Registered
Elective	14417 Lead and supervise construction teams	Level 4	8	Registered
Elective	14430 Supervise the procurement, use and storage of construction materials	Level 4	10	Registered
Elective	116579 Supervise installation of precast concrete elements	Level 4	8	Registered
Elective	116583 Perform tandem lifting	Level 4	12	Registered
Fundamental	7456 Use mathematics to investigate and monitor the financial aspects of personal, business and national issues	Level 3	2	Registered

Fundamental	8968 Accommodate audience and context needs in oral communication	Level 3	5	Registered
Fundamental	8969 Interpret and use information from texts	Level 3	5	Registered
Fundamental	8970 Write texts for a range of communicative contexts	Level 3	5	Registered
Fundamental	8973 Use language and communication in occupational learning programmes	Level 3	5	Registered
Fundamental	9010 Demonstrate an understanding of the use of different number bases and measurement units and an awareness of error in the context of relevant calculations	Level 3	2	Registered
Fundamental	9012 Investigate life and work related problems using data and probabilities	Level 3	5	Registered
Fundamental	9013 Describe, apply, analyse and calculate shape and motion in 2-and 3-dimensional space in different contexts	Level 3	4	Registered
Fundamental	14086 Work with a wide range of patterns and basic functions and solve related problems	Level 3	3	Registered

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD: 1

Apply specialised finishes to concrete

SAQA US ID	*UNIT STANDARD TITLE*
116559	Apply specialised finishes to concrete

SGB NAME	*ABET BAND*	*PROVIDER NAME*
SGB Civil Engineering Construction	Undefined	

FIELD DESCRIPTION	*SUBFIELD DESCRIPTION*
Physical Planning and Construction	Civil Engineering Construction

UNIT STANDARD CODE	*UNIT STANDARD TYPE*	*NQF LEVEL*	*CREDITS*
PPC-CEC-0-SGB CEC	Regular	Level 3	7

Specific Outcomes:

SPECIFIC OUTCOME 1

Prepare shutters for 'as struck' finishes.

SPECIFIC OUTCOME 2

Apply texturing finish to fresh struck concrete.

SPECIFIC OUTCOME 3

Apply texturing finish to hardened concrete.

SPECIFIC OUTCOME 4

Ensure concrete and concreting method is appropriate for finish.

SPECIFIC OUTCOME 5

Cure and protect concrete

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD: 2

Demonstrate knowledge of and apply basic concrete construction practice

SAQA US ID	*UNIT STANDARD TITLE*
116562	Demonstrate knowledge of and apply basic concrete construction practice

SGB NAME	*ABET BAND*	*PROVIDER NAME*
SGB Civil Engineering Construction	Undefined	

FIELD DESCRIPTION	*SUBFIELD DESCRIPTION*
Physical Planning and Construction	Civil Engineering Construction

UNIT STANDARD CODE	*UNIT STANDARD TYPE*	*NQF LEVEL*	*CREDITS*
PPC-CEC-0-SGB CEC	Regular	Level 3	10

Specific Outcomes:

SPECIFIC OUTCOME 1

Demonstrate knowledge of concrete properties.

SPECIFIC OUTCOME 2

Demonstrate knowledge of concrete materials.

SPECIFIC OUTCOME 3

Demonstrate knowledge of concrete mix design.

SPECIFIC OUTCOME 4

Demonstrate knowledge of quality control of concrete.

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD: 3

Operate and maintain a steel cutting machine

SAQA US ID	*UNIT STANDARD TITLE*
116566	Operate and maintain a steel cutting machine

SGB NAME	*ABET BAND*	*PROVIDER NAME*
SGB Civil Engineering Construction	Undefined	

FIELD DESCRIPTION	*SUBFIELD DESCRIPTION*
Physical Planning and Construction	Civil Engineering Construction

UNIT STANDARD CODE	*UNIT STANDARD TYPE*	*NQF LEVEL*	*CREDITS*
PPC-CEC-0-SGB CEC	Regular	Level 3	5

Specific Outcomes:

SPECIFIC OUTCOME 1

Implement occupational health and safety measures.

SPECIFIC OUTCOME 2

Prepare to cut steel.

SPECIFIC OUTCOME 3

Cut steel.

SPECIFIC OUTCOME 4

Conduct post cutting operations.

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD: 4

Operate and maintain a steel bending machine

SAQA US ID	*UNIT STANDARD TITLE*
116569	Operate and maintain a steel bending machine

SGB NAME	*ABET BAND*	*PROVIDER NAME*
SGB Civil Engineering Construction	Undefined	

FIELD DESCRIPTION	*SUBFIELD DESCRIPTION*
Physical Planning and Construction	Civil Engineering Construction

UNIT STANDARD CODE	*UNIT STANDARD TYPE*	*NQF LEVEL*	*CREDITS*
PPC-CEC-0-SGB CEC	Regular	Level 3	5

Specific Outcomes:

SPECIFIC OUTCOME 1

Implement occupational health and safety measures.

SPECIFIC OUTCOME 2

Prepare to bend steel.

SPECIFIC OUTCOME 3

Bend steel.

SPECIFIC OUTCOME 4

Conduct post bending operations.

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD: 5

Assemble, tie and fix reinforcing cages

SAQA US ID	*UNIT STANDARD TITLE*
116573	Assemble, tie and fix reinforcing cages

SGB NAME	*ABET BAND*	*PROVIDER NAME*
SGB Civil Engineering Construction	Undefined	

FIELD DESCRIPTION	*SUBFIELD DESCRIPTION*
Physical Planning and Construction	Civil Engineering Construction

UNIT STANDARD CODE	*UNIT STANDARD TYPE*	*NQF LEVEL*	*CREDITS*
PPC-CEC-0-SGB CEC	Regular	Level 2	3

Specific Outcomes:

SPECIFIC OUTCOME 1

Prepare work area.

SPECIFIC OUTCOME 2

Prepare to fix reinforcing steel.

SPECIFIC OUTCOME 3

Fix reinforcing.

SPECIFIC OUTCOME 4

Describe types and uses of reinforcing.

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD: 6

Read and interpret reinforcing materials documentation

SAQA US ID	*UNIT STANDARD TITLE*
116578	Read and interpret reinforcing materials documentation

SGB NAME	*ABET BAND*	*PROVIDER NAME*
SGB Civil Engineering Construction	Undefined	

FIELD DESCRIPTION	*SUBFIELD DESCRIPTION*
Physical Planning and Construction	Civil Engineering Construction

UNIT STANDARD CODE	*UNIT STANDARD TYPE*	*NQF LEVEL*	*CREDITS*
PPC-CEC-0-SGB CEC	Regular	Level 2	3

Specific Outcomes:

SPECIFIC OUTCOME 1

Explain the role of drawings and specifications.

SPECIFIC OUTCOME 2

Identify and describe various aspects of reinforcing documentation.

SPECIFIC OUTCOME 3

Interpret requirements from reinforcing documentation.

SPECIFIC OUTCOME 4

Safeguard, store and issue construction drawings.

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD: 7

Supervise the batching and mixing of concrete by mass using a concrete mixer

SAQA US ID	*UNIT STANDARD TITLE*
116582	Supervise the batching and mixing of concrete by mass using a concrete mixer

SGB NAME	*ABET BAND*	*PROVIDER NAME*
SGB Civil Engineering Construction	Undefined	

FIELD DESCRIPTION	*SUBFIELD DESCRIPTION*
Physical Planning and Construction	Civil Engineering Construction

UNIT STANDARD CODE	*UNIT STANDARD TYPE*	*NQF LEVEL*	*CREDITS*
PPC-CEC-0-SGB CEC	Regular	Level 3	5

Specific Outcomes:

SPECIFIC OUTCOME 1

Calibrate and set scales.

SPECIFIC OUTCOME 2

Supervise the batching of materials within tolerances.

SPECIFIC OUTCOME 3

Mix and discharge the concrete.

SPECIFIC OUTCOME 4

Supervise post mixing operations.