No. 759 **29 July 2005**

Established in terms of Act 58 of 1995

SOUTH AFRICAN QUALIFICATIONS AUTHORITY (S A M)

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

Civil Engineering Construction

publishes the following qualification and unit standards for public comment.

This notice contains the titles, fields, subfields, NQF levels, credits, and purpose of the qualification and unit standards. The 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, Pretoria.

Comment on the qualification and unit standards should reach SAQA at the address **below** ***and*** **no later than** ***29*** August **2005.** All correspondence should be marked **Standards Setting – SGB Civil Engineering Construction** and addressed to

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Attention: Mr. Eddie Brown
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DU M REMP THING
ACTING DIRECTOR: STANDARDS SETTING AND DEVELOPMENT

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

QUALIFICATION:

National Certificate: Rail Construction and Maintenance

SAQA QUAL ID	*QUALIFICATION TITLE*		
49795	National Certificate: Rail Construction and Maintenance		
SGB NAME		*NSB 12*	*PROVIDER NAME*
SGB Civil Engineering Construction		Physical Planning and Construction	
QUAL TYPE-		*FIELD*	*SUBFIELD*
National Certificate		Physical Planning and Construction	Civil Engineering Construction
ABET BAND	*MINIMUM CREDITS*	*NQF LEVEL*	*QUALIFICATION CLASS*
Undefined	138	Level 3	Regular-Unit Stds Based

PURPOSE AND RATIONALE OF THE QUALIFICATION

Purpose of the Qualification:

The purpose of this qualification is to ensure competent performance in railway track construction and maintenance, thereby enhancing safety and reliability in the field of Civil Engineering Construction and Maintenance. It will also facilitate increased access of learners to this field.
For those who have been in the workplace for a long time, this Qualification can be used to assess and recognise workplace skills acquired without the benefit of formal education and training.
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 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.
The primary skills that are recognised in this Qualification relate to the construction of railway lines and turnouts, as well as the maintenance of the railway track.
The Qualification will lay a foundation for future career advancement to supervisory and management Qualifications within this field.

Rationale for the Qualification:

This Qualification is for those persons who are involved in activities relating to the construction and/or maintenance of railway track. Such activities can be performed in any of the following contexts:

Public Rail Transport, including Freight and Passenger Transport
Private Sidings
Mining operations
Port operations

The combination of learning outcomes in this Qualification will provide the learner with applied competence with regard to Rail Construction and Maintenance activities. This Qualification recognises skills, knowledge and values relevant to the workplace. It is suitable for learners who:

> Have attended courses and then apply the knowledge gained to activities in the workplace.
> Are already employed and have acquired the skills and knowledge without attending formal courses.
> Participate in skills programmes or learnerships and the appropriate work experience.
> Acquire the learning through any combination of the above.

The demand for the Qualification stems from the following factors:

> The growing need to qualify learners who can contribute to the creation and maintenance of a national rail transport network, which is affordable, reliable, available and safe.
> Unique environmental circumstances in South Africa, including extreme climatic conditions, which necessitate the continuous maintenance of the rail network.
> The continuous introduction of new technologies in the Rail Construction and Maintenance environment.
> The importance of Rail Transport as one of the key transportation modes in the country.

The learning pathway for a learner within the Rail Construction and Maintenance Industry is outlined below:

> NQF Level 2:

"National Certificate: Rail Construction and Maintenance" (Generic Qualification, with specialization in Rail Construction/Maintenance).

NQF Level 3:

"National Certificate: Rail Construction and Maintenance".

NQF Level 4:

"FETC: Supervision of Construction Activities: Rail Construction and Maintenance" (Generic Qualification, specialization in Rail Construction/Maintenance).

NQF Level 5:

"National Certificate: Management of Construction Activities: Rail Construction and Maintenance" (Generic Qualification, with specialization in Rail Construction/Maintenance).

As a contribution to socio-economic transformation, learners will be able to undergo RPL-assessment, thereby receiving recognition for previous learning and experience. The employability and career prospects of learners holding this Qualification will be enhanced.

Benefits to the economy would include improved employment prospects for previously unskilled persons.

The availability of a safe, reliable and affordable Rail network will have a major impact on the economy of the country.

RECOGNIZE PREVIOUS LEARNING?

Y

LEARNING ASSUMED TO BE IN PLACE

It is assumed that learners are already competent in the following:

> Mathematical Literacy at NQF Level 2
> Communication at NQF Level 2

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 to the relevant Education and Training Quality Assurance Body (ETQA) for Recognition of Prior Learning and will be assessed against the assessment criteria and specific outcomes for the relevant Unit Standard/s. ETQA bodies are responsible for facilitating the implementation of the RPL, and must register trained assessors against specific Unit Standards. Learners are prepared for assessment and assessed against the Unit Standard by such registered assessors. Learners declared competent against a specific Unit Standard will receive ETQA certificates indicating their achievements and this information will also be recorded on the National Learner Record Database (NLRD).

Access to the Qualification:

Access to this qualification is open to all learners, bearing in mind the learning assumed to be in place detailed in this qualification.

However learners within the public rail sector have to complete the Unit Standards listed in the table below, prior to being granted access to this Qualification. These Unit Standards deal with "train working rules". This prerequisite is in accordance with the safety requirements of the Rail Regulator for public rail transport. Advances in track maintenance technology and associated requirements have increased the need for learners in the public rail sector to achieve all these "train working rules".

This access requirement does not apply to learners within the Private rail transport sector.

Unit Standards relating to "train working **rules"** are the following:

> **14594** - Utilise semaphore signals/indicators for rail movement on double lines
> **14607** - Utilise semaphore signals/indicators for rail movement on single lines
> **14611** - Utilise colour-light signalling for rail movement
> **14621** - Perform crossing of trains
> **14608** - Utilise pilot working of train control for safe movement on rail
> **14622** - Utilise telegraph order system for safe movement on rail
> **14668** - Utilise the radio train order system of train control for safe movement on rail
> **14671** - Utilise track warrant system of train control for safe movement on rail
> **14637** - Utilise Van Schoor method of train control for safe movement on rail
> **14634** - Utilise various fixed and temporary trackside indicators for rail movement
> **14670** - Utilise wooden train staff system of train control for safe movement on rail

QUALIFICATION RULES

The Qualification is composed of Fundamental, Core and Elective learning components:

Fundamental: **36** credits
Core: **100** credits
Elective: Minimum of **2** credits
Total: **138**

EXIT LEVEL OUTCOMES

1. Afford on-track protection
2. Construct a railway line, as well as a standard turnout
3. Measure track Geometry in order to determine track condition and restore track alignment and super elevation
4. Maintain andlor replace rails, as well as turn outs and turnout components
5. Destress rails
6. Maintain clearances, safety devices and markers

Critical cross-field outcomes:

> Identify and solve problems.
Problems experienced with resources, including materials, tools and equipment, are timeously and effectively resolved.

> Work effectively with all role-players.
Sound relations are maintained with relevant role-players within the rail environment.

> Employ self-management and reflect on own performance and areas for improvement.
Suggestions are made with regard to improvement of own performance.

> Manage information effectively.
Drawings, job instructions and specifications are accurately interpreted and correctly utilized.

> Communicate effectively with all role-players.
Written communication skills are demonstrated by means of the accurate and legible completion of relevant documentation and reports.

> Demonstrate scientific and technological competence.
Technologies used within rail construction and maintenance, are correctly identified and applied.

> Understand contextual world systems.

The significance of the permanent way in the broader rail industry, is explained.

ASSOCIATED ASSESSMENT CRITERIA

1.
> On track protection is afforded and discontinued in accordance with company procedures and safety requirements.

2.
> A railway line is constructed and handed over in accordance with the design plan and specifications, as well as company procedures.
> A standard turnout is prepared, laid out and built in accordance with the turnout plan and instructions.

3.
> Vertical and horizontal alignment deviation measurements are performed and interpreted on straight track and on curves, as well as super elevation on curves, in order to determine track condition.
> Track alignment and super elevation is restored, using the appropriate corrective action and restoring method/s.

4.
> Rails and rail joints are maintained and /or replaced in accordance with relevant track standards and specifications.> Turnouts and turnout components are replaced and /or maintained in accordance with relevant track standards and specifications.

5.
> Rails are destressed (continuous welded rails, as well as jointed rails) conventionally (manually), as well as by using a rail tensioner and creep is repaired in track in accordance with relevant track standards and specifications.

6.
> Horizontal and vertical clearances, safety devices and markers are maintained in accordance with relevant specifications.

Integrated assessment:

Because assessment practices must be open, transparent, fair, valid, and reliable and ensure that no learner is disadvantaged in any way whatsoever, an integrated assessment approach is incorporated into the Qualification.

Learning, teaching and assessment are inextricably lined. Whenever possible, the assessment of knowledge, skills, attitudes and values shown in the unit standards should be integrated.

Assessment of the communication, mathematical literacy should be conducted in conjunction with other aspects and should use authentic Rail Construction contexts wherever possible.

A variety of methods must be used in assessment and tools and activities must be appropriate to the context in which the learner is working. Where it is not possible to assess the learner in the workplace or on-the-job, simulations, case studies, role-plays and other similar techniques should be used to provide a context appropriate to the assessment.

The term 'Integrated Assessment' implies that theoretical and practical components should be assessed together. During integrated assessments the assessor should make use of formative and summative assessment methods and assess combinations of practical, applied, foundational and reflective competencies.

Assessors and moderators should make use of a range of formative and summative assessment methods. Assessors should assess and give credit for the evidence of learning that has already been acquired through formal, informal and non-formal learning and work experience.

Assessment should ensure that all specific outcomes, embedded knowledge and Critical Cross-Field outcomes are evaluated. The assessment of the Critical Cross-Field outcomes should be integrated with the assessment of specific outcomes and embedded knowledge.

INTERNATIONAL COMPARABILIN

United Kingdom:

The National Certificate in Rail Construction and Maintenance has been benchmarked against the corresponding Qualifications on the Qualification Framework in the United Kingdom. The following emanated from the benchmarking process:

Title of corresponding Qualification:
NVQ in Rail Transport Engineering Maintenance, Levels 3.

Differences with South African Qualification:

The UK Qualification incorporates the different railway engineering disciplines into one Qualification, i.e. a generic core with different streams representing the various disciplines, such as Signal Maintenance, Signal Faulting, Communications, Permanent way, Electrification, Traction and Rolling stock and Plant. In the South African model, each of the railway engineering disciplines are reflected in separate, specialized Qualifications.

Similarities with South African Qualification:
There are a lot of similarities with regard to the individual units or competencies included in this Qualification.

These include competencies relating to:

> Establishing and maintaining protection.
> Health and Safety.
> Diagnosing faults.
> Coordinating activities with others.
> Contributing to improving the organisation's working practices.
> Establishing and maintaining possession of a line during engineering activities.
> Contributing to the control of trains and other rail borne vehicles.
> Using small plant.
> Planning activities and preparing resources.
> Reinstating the work area upon completion of activities.

New Zealand:

The National Certificate: Rail Construction and Maintenance has been benchmarked against the corresponding Qualification and individual Unit Standards registered by the New Zealand Qualifications Authority. The following emanated from the benchmarking process:

Title of corresponding Qualification
National Certificate in Rail Infrastructure, Level 3.

Differences with South African Qualification:

The aim of the New Zealand Qualification *is* to provide recognition for a broad range of competencies related to the maintenance of track, structures and signals within the rail industry. The South African equivalent excludes signalling and represents a more specialized range of competencies, relating to the construction and maintenance of railway track.

Similarities with South African Qualification:
There are a lot of similarities with regard to the individual units or competencies included in this Qualification. These include competencies relating to:

> Fundamental competencies, i.e. Communication and Mathematics.
> Health and Safety.
> An understanding *of* the rail transport industry.
> Track protection.
> The use and care of a range of tools.

Individual Unit Standards registered on the New Zealand Framework, which correlate with some of the South African Unit Standards, include:

> Installing/replacing rails.
> Installing/replacing sleepers.

> Maintaining track.
> Undertaking track ballast activities.
> Establishing or correcting rail stress.
> Maintaining rail bridges.
> Maintaining track geometry by measuring, recording and analyzing track parameters.
> Conducting inspections.
> Operating rail service vehicles.

ARTICULATION OPTIONS

Horizontal articulation is possible with:

> National Certificate: Rail Operations at NQF Level 3

Vertical articulation is possible with:

> National Certificate: Management of Construction activities at NQF Level 4
> National Certificate: Rail Operations at NQF Level 4
> National Certificate: Supervision of Construction Processes at NQF Level 4

MODERATION OPTIONS

> Anyone assessing a learner or moderating the assessment of a learner against this Qualification must be registered as an assessor with the relevant Education, Training, Quality, Assurance (ETQA) Body, or with an ETQA that has a Memorandum of Understanding 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 Education, Training, Quality, Assurance (ETQA) Body, or with an ETQA that has a Memorandum of Understanding with the relevant ETQA.

> Assessment and moderation of assessment will be overseen by the relevant Education, Training, Quality, Assurance (ETQA) Body, or by an ETQA that has a Memorandum of Understanding with the relevant ETQA, according *to* the ETQA's policies and guidelines for assessment and moderation.

> 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 that is accredited by the relevant ETQA.

CRITERIA FOR THE REGISTRATION OF ASSESSORS

Registration as an assessor requires:

> Registration as an assessor by the relevant ETQA.
> National Certificate: Rail Construction and Maintenance NQF Level 4 or a higher appropriate qualification.

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	119980 Maintain clearances, safety devices and markers to ensure a safe rail environment	Level 2	5	Draft - Prep for P Comment
core	14623 Afford on-track protection	Level 3	5	Registered
Core	119973 Measure track geometry in order to determine track condition	Level 3	15	Draft - Prep for P Comment
Core	119977 Maintain rails	Level 3	21	Draft - Prep for P Comment
core	119978 Construct a railway line	Level 3	10	Draft - Prep for P Comment

core	**119979** Restore track alignment	Level 3	15	Draft - Prep for P Comment
core	**119981** Destress rails	Level 3	8	Draft - Prep for P Comment
core	**119982** Maintain rail turnouts and turnout components	Level 3	12	Draft - Prep for P Comment
Core	**119984** Build a standard rail turnout	Level 3	9	Draft - Prep for P Comment
Elective	**119975** Install and maintain trackside rail lubricators	Level 2	3	Draft - Prep for P Comment
Elective	**13915** Demonstrate knowledge and understanding of HIV/AIDS in a workplace, and its effects on a business sub-sector, own organisation and a specific workplace	Level 3	4	Registered
Elective	**14580** Read and interpret construction drawings and specifications	Level 3	10	Registered
Elective	**14594** Utilise semaphore signals/indicators for rail movement on double lines	Level 3	4	Registered
Elective	**14607** Utiliie semaphore signals/indicators for rail movement on single lines	Level 3	8	Registered
Elective	**14608** Utilise pilot working of train control for safe movement on rail	Level 3	2	Registered
Elective	**14621** Perform crossing of trains	Level 3	3	Registered
Elective	**14622** Utilise telegraph order system for safe movement on rail	Level 3	5	Registered
Elective	**14634** Utilie various fixed and temporary trackside indicators for rail movement	Level 3	3	Registered
Elective	**14637** Utilise Van Schoor method of train control for safe movement on rail	Level 3	5	Registered
Elective	**14668** Utiliie the radio train order system of train control for safe movement on rail	Level 3	3	Registered
Elective	**14670** Utilise wooden train staff system of train control for safe movement on rail	Level 3	3	Registered
Elective	**14671** Utilise track warrant system of train control for safe movement on rail	Level 3	5	Registered
Elective	**119974** Construct temporary track support	Level 3	3	Draft - Prep for P Comment
Elective	**119983** Operate mad rail vehicles and associated hydraulic equipment	Level 3	18	Draft - Prep for P Comment
Elective	**119985** Build an advanced rail turnout	Level 3	6	Draft - Prep for P Comment
Elective	**10953** Operate a rigid vehicle	Level 4	32	Reregistered
Elective	**14611** Utilise dour-light signalling for rail movement	Level 4	18	Registered
Fundamental	**7456** Use mathematics to investigate and monitor the financial aspects of personal, business and national issues	Level 3	5	Reregistered
Fundamental	**8968** Accommodate audience and context needs in oral communication	Level 3	5	Reregistered
Fundamental	**8969** Interpret and use information from texts	Level 3	5	Reregistered
Fundamental	**8970** Write texts for a range of communicative contexts	Level 3	5	Reregistered
Fundamental	**8973** Use language and communication in occupational learning programmes	Level 3	5	Reregistered
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	Reregistered
Fundamental	**9012** Investigate lie and work related problems using data and probabilities	Level 3	5	Reregistered
Fundamental	**9013** Describe, apply, analyse and calculate shape and motion in 2-and 3-dimensional space in different contexts	Level 3	4	Reregistered

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

SAQA US ID	*UNIT STANDARD TITLE*		
119973	Measure track geometry in order to determine track condition		
SGB NAME		*NSB 12*	*PROVIDER NAME*
SGB Civil Engineering Construction		Physical Planning and Construction	
UNIT STANDARD TYPE		*FIELD DESCRIPTION*	*SUBFIELD DESCRIPTION*
Regular		Physical Planning and Construction	Civil Engineering Construction
ABET BAND	*CREDITS*	*NQF LEVEL*	*UNIT STANDARD TYPE*
Undefined	15	Level *3*	Regular

SPECIFIC OUTCOME 1

Demonstrate an understanding of the purpose of track standards and measurements.

SPECIFIC OUTCOME 2

Prepare to measure track geometry.

SPECIFIC OUTCOME 3

Perform vertical and horizontal alignment deviation measurements.

SPECIFIC OUTCOME 4

Measure curves.

SPECIFIC OUTCOME 5

Interpret measurements in order to determine track condition.

SPECIFIC OUTCOME 6

Complete post-measurementoperations.

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Construct temporary track support

SAQA US ID	*UNIT STANDARD TITLE*		
119974	Construct temporary track support		
SGB NAME		*NSB 12*	*PROVIDER NAME*
SGB Civil Engineering Construction		Physical Planning and Construction	
UNIT STANDARD TYPE		*FIELD DESCRIPTION*	*SUBFIELD DESCRIPTION*
Regular		Physical Planning and Construction	Civil Engineering Construction
ABET BAND	*CREDITS*	*NQF LEVEL*	*UNIT STANDARD TYPE*
Undefined	3	Level 3	Regular

SPECIFIC OUTCOME 1

Prepare ***to*** construct temporary track support.

SPECIFIC OUTCOME 2

Construct rail girders.

SPECIFIC OUTCOME 3

Construct cribs.

SPECIFIC OUTCOME 4

Perform post construction operations.

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Install and maintain trackside rail lubricators

SAQA US ID	*UNIT STANDARD TITLE*		
119975	Install and maintain trackside rail lubricators		
SGB NAME		*NSB 12*	*PROVIDER NAME*
SGB Civil Engineering Construction		Physical Planning and Construction	
UNIT STANDARD TYPE		*FIELD DESCRIPTION*	*SUBFIELD DESCRIPTION*
Regular		Physical Planning and Construction	Civil Engineering Construction
ABET BAND	*CREDITS*	*NQF LEVEL*	*UNIT STANDARD TYPE*
Undefined	3	Level 2	Regular

SPECIFIC OUTCOME 1

Demonstrate an understanding of trackside rail lubricators.

SPECIFIC OUTCOME 2

Prepare to install trackside rail lubricators.

SPECIFIC OUTCOME 3

Install trackside rail lubricators.

SPECIFIC OUTCOME 4

Inspect, fill and maintain trackside rail lubricators.

SPECIFIC OUTCOME 5

Complete post installation and maintenance operations.

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

SAQA US ID	*UNIT STANDARD TITLE*		
119977	Maintain rails		
SGB NAME		*NSB 12*	*PROVIDER NAME*
SGB Civil Engineering Construction		Physical Planning and Construction	
UNIT STANDARD TYPE		*FIELD DESCRIPTION*	*SUBFIELD DESCRIPTION*
Regular		Physical Planning and Construction	Civil Engineering Construction
ABET BAND	*CREDITS*	*NQF LEVEL*	*UNIT STANDARD TYPE*
Undefined	**21**	Level 3	Regular

SPECIFIC OUTCOME 1

Prepare for rail maintenance.

SPECIFIC OUTCOME 2

Prepare rails for placement.

SPECIFIC OUTCOME 3

Replace rails.

SPECIFIC OUTCOME 4

Maintain rail joints.

SPECIFIC OUTCOME 5

Complete post maintenance operations.

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

SAQA US ID	UNIT STANDARD TITLE		
119978	Construct a railway line		
SGB NAME		**NSB 12**	**PROVIDER NAME**
SGB Civil Engineering Construction		Physical Planning and Construction	
UNIT STANDARD TYPE		**FIELD DESCRIPTION**	**SUBFIELD DESCRIPTION**
Regular		Physical Planning and Construction	Civil Engineering Construction
ABET BAND	**CREDITS**	**NQF LEVEL**	**UNIT STANDARD TYPE**
Undefined	10	Level 3	Regular

SPECIFIC OUTCOME 1

Read, interpret and apply information on design plan of railway line.

SPECIFIC OUTCOME 2

Prepare to construct a railway line.

SPECIFIC OUTCOME 3

Prepare rails for placement.

SPECIFIC OUTCOME 4

Place ballast, sleepers, fastenings and rails.

SPECIFIC OUTCOME 5

Finalise ballast, lift, align and tamp track.

SPECIFIC OUTCOME 6

Finalise track and hand over to client.

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

SAQA US ID	UNIT STANDARD TITLE		
119979	Restore track alignment		
SGB NAME		**NSB 72**	**PROVIDER NAME**
SGB Civil Engineering Construction		Physical Planning and Construction	
UNIT STANDARD TYPE		**FIELD DESCRIPTION**	**SUBFIELD DESCRIPTION**
Regular		Physical Planning and Construction	Civil Engineering Construction
ABET BAND	**CREDITS**	**NQF LEVEL**	**UNIT STANDARD TYPE**
Undefined	15	Level 3	Regular

SPECIFIC OUTCOME 1

Prepare to restore alignment.

SPECIFIC OUTCOME 2

Restore vertical alignment.

SPECIFIC OUTCOME 3

Restore horizontal alignment.

SPECIFIC OUTCOME 4

Complete the restoring process.

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Maintain clearances, safety devices and markers to ensure a safe rail environment

SAQA US ID	UNIT STANDARD TITLE		
119980	Maintain clearances, safety devices and markers to ensure a safe rail environment		
SGB NAME		**NSB 12**	**PROVIDER NAME**
SGB Civil Engineering Construction		Physical Planning and Construction	
UNIT STANDARD TYPE		**FIELD DESCRIPTION**	**SUBFIELD DESCRIPTION**
Regular		Physical Planning and Construction	Civil Engineering Construction
ABET BAND	**CREDITS**	**NQF LEVEL**	**UNIT STANDARD TYPE**
Undefined	5	Level 2	Regular

SPECIFIC OUTCOME 1

Prepare to maintain clearances, safety devices and markers.

SPECIFIC OUTCOME 2

Maintain horizontal and vertical clearances.

SPECIFIC OUTCOME 3

Install and/or maintain safety devices and fouling points.

SPECIFIC OUTCOME 4

Complete post-maintenanceoperations.

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Destress rails

SAQA US ID	*UNIT STANDARD TITLE*		
119981	Destress rails		
SGB NAME		*NSB 12*	*PROVIDER NAME*
SGB Civil Engineering Construction		Physical Planning and Construction	
UNIT STANDARD TYPE		*FIELD DESCRIPTION*	*SUBFIELD DESCRIPTION*
Regular		Physical Planning and Construction	Civil Engineering Construction
ABET BAND	*CREDITS*	*NQF LEVEL*	*UNIT STANDARD TYPE*
Undefined	8	Level 3	Regular

SPECIFIC OUTCOME 1

Prepare to destress rails.

SPECIFIC OUTCOME 2

Destress continuous welded rails conventionally.

SPECIFIC OUTCOME 3

Destress continuous welded rails using a rail tensioner.

SPECIFIC OUTCOME 4

Destressjointed rails.

***SPECIFIC OUTCOME* 5**

Repair creep in the track.

SPECIFIC OUTCOME 6

Determine stress free temperatures in the rail.

SPECIFIC OUTCOME 7

Complete post-operationaltasks related to destressing.

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

SAQA US ID	*UNIT STANDARD TITLE*		
119982	Maintain rail turnouts and turnout components		
SGB NAME		*NSB 72*	*PROVIDER NAME*
SGB Civil Engineering Construction		Physical Planning and Construction	
UNIT STANDARD TYPE		*FIELD DESCRIPTION*	*SUBFIELD DESCRIPTION*
Regular		Physical Planning and Construction	Civil Engineering Construction
ABET BAND	*CREDITS*	*NQF LEVEL*	*UNIT STANDARD TYPE*
Undefined	12	Level 3	Regular

SPECIFIC OUTCOME 1

Prepare to maintain turnouts and components.

SPECIFIC OUTCOME 2

Obtain measurements of turnouts, turnout components and replacement material.

SPECIFIC OUTCOME 3

Remove and replace turnouts and components.

SPECIFIC OUTCOME 4

Perform post-maintenance operations.

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Operate road rail vehicles and associated hydraulic equipment

SAQA US ID	*UNIT STANDARD TITLE*		
119983	Operate road rail vehicles and associated hydraulic equipment		
SGB NAME		*NSB 12*	*PROVIDER NAME*
SGB Civil Engineering Construction		Physical Planning and Construction	
UNIT STANDARD TYPE		*FIELD DESCRIPTION*	*SUBFIELD DESCRIPTION*
Regular		Physical Planning and Construction	Civil Engineering Construction
ABET BAND	*CREDITS*	*NQF LEVEL*	*UNIT STANDARD TYPE*
Undefined	18	Level 3	Regular

SPECIFIC OUTCOME 1

Demonstrate an understanding of the purpose and application of road rail vehicles (RRV), as well as hydraulic equipment.

SPECIFIC OUTCOME 2

Execute on- and off-tracking of road rail vehicles.

SPECIFIC OUTCOME 3

Operate road rail vehicles on track.

SPECIFIC OUTCOME 4

Utilise equipment on road rail vehicle.

SPECIFIC OUTCOME 5

Ensure effective and safe utilisation of road rail vehicles and equipment by team.

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Build a standard rail turnout

SAQA US ID	*UNIT STANDARD TITLE*		
119984	Build a standard rail turnout		
SGB NAME		*NSB 12*	*PROVIDER NAME*
SGB Civil Engineering Construction		Physical Planning and Construction	
UNIT STANDARD TYPE		*FIELD DESCRIPTION*	*SUBFIELD DESCRIPTION*
Regular		Physical Planning and Construction	Civil Engineering Construction
ABET BAND	*CREDITS*	*NQF LEVEL*	*UNIT STANDARD TYPE*
Undefined	9	Level 3	Regular

SPECIFIC OUTCOME 1

Prepare to build a turnout.

SPECIFIC OUTCOME 2

Lay out and build turnout in accordance with specifications.

SPECIFIC OUTCOME 3

Assess turnout.

SPECIFIC OUTCOME 4

Assess stock and switchblades.

SPECIFIC OUTCOME 5

Complete post-constructionoperations.

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Build an advanced rail turnout

SAQA US ID	*UNIT STANDARD TITLE*		
119985	Build an advanced rail turnout		
SGB NAME		*NSB 12*	*PROVIDER NAME*
SGB Civil Engineering Construction		Physical Planning and Construction	
UNIT STANDARD TYPE		*FIELD DESCRIPTION*	*SUBFIELD DESCRIPTION*
Regular		Physical Planning and Construction	Civil Engineering Construction
ABET BAND	*CREDITS*	*NQF LEVEL*	*UNIT STANDARD TYPE*
Undefined	6	Level 3	Regular

SPECIFIC OUTCOME 1

Prepare to build a turnout.

SPECIFIC OUTCOME 2

Lay out and build turnout in accordance with specifications.

SPECIFIC OUTCOME 3

Assess turnout.

SPECIFIC OUTCOME 4

Assess stock and switchblades.

SPECIFIC OUTCOME 5

Complete post-construction operations.

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