

PART C3: SCOPE OF WORK

PART C3: SCOPE OF WORKS
BID NO: TECH-003-2020/21
CAPRICORN PARK UPGRADING OF INTERNAL STREETS FROM GRAVEL TO SURFACING PHASE 3

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C3.1 STANDARD SPECIFICATIONS

Although not bound in nor issued with this document, the following standardised specifications will form part of the contract document:

SABS/SANS 1200.

The following SANS specifications are also referred to in this document and the Contractor is advised to obtain them from Standards South Africa (a division of SABS) in Pretoria.

SANS 10396: 2003:	Implementing Preferential Construction Procurement Policies using Targeted Procurement Procedures
SANS 1914-4 (2002):	Targeted Construction Procurement (local resources)
SANS 1921 – 1 (2004):	Construction and Management Requirements for Works Contracts Part 1: General Engineering and Construction Works and where accommodation of traffic is involved:
SANS 1921-2 (2004):	Construction and Management Requirements for Works Contracts; And Part 2: Accommodation of Traffic on Public Roads Occupied by the Contractor.

C3.2 PROJECT SPECIFICATIONS

PART A: GENERAL

PS-1	Project Description
PS-2	Description of the Site and Access
PS-3	Details of the Works
PS-4	Construction Management Requirements
PS-5	Management of the Works
PS-6	Procurement
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PART B: AMENDMENTS TO THE STANDARD SPECIFICATIONS

B1	Project Specifications Relating to the Standard Specifications and Additional Specifications
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PART A: GENERAL

PS-1 PROJECT DESCRIPTION

The scope of work for this project is for the upgrading of internal roads from gravel to surfaced roads in Capricorn Park.

The scope includes the installation of storm water pipe systems to manage the run-off in the area as well as the incorporation of existing services (sewer and water) into the design. The lowering of existing manholes and formalization of valves chambers may be required. Installation of kerbs and edge beams is also foreseen.

The total length of internal streets is 5.23km. The current scope (Phase 3A) will cover the construction of 950m of roads with kerbs as well as 550m of stormwater pipes and junction boxes.

PS-2 DESCRIPTION OF THE SITE AND ACCESS

Capricorn Park is located within the jurisdiction of Molemole Local Municipality (MLM), in the town of Morebeng, approximately 65km North East of Polokwane in Limpopo Province.

Capricorn park is accessed off the R36 (P17/3 - Provincial Road) and the road to be upgraded is from this intersection.

The geographical co-ordinates of the site are Longitude (E): 29°55'06" and Latitude (S): 23°28'85".

PS-3 DETAILS OF THE WORKS

3.1 General

ROADWORKS & STORMWATER

- Construction of layer works, (subbase and base layers) as per the pavement design specification
- Installation of kerbs on both sides
- Surfacing of roads with interlocking paving blocks
- Painting of road markings (predominantly Stops and pedestrian crossings)
- Erection of signage
- Construction of bellmouths at intersecting roads
- Installation of Stormwater pipelines
- Installation of Kerb Inlets
- Installation of Junction Boxes
- Installation of Outlet Structure

3.3 Temporary Works

The Contractor shall, as relevant,

- a) provide temporary drainage works, temporary pumps and other equipment as might be necessary for the protection, draining and dewatering of the works; and
- b) Construct and maintain haulage, temporary access and construction roads, subject to the approval of the Employer, and permit the Employer, other Contractors, statutory bodies or any other person who might require legitimate access to or through the site for executing legitimate business, free and unhindered usage of such roads.
- c) Temporary water connections, Contractor's offices, storage sheds, latrines, barricading of Works shall be in an approved location and subject to the approval of all authorities concerned.
- d) Safety and Security of the Contractor's temporary works shall be at the Contractor's discretion.
- e) The camp(s) shall be adequately guarded during or outside working hours.

Drawings

The list of drawings is included in **PART C4** of this document and is subject to revision. The revised drawings shall be issued timeously by the Engineer. The list of drawings issued includes all the drawings for the complete upgrade of Capricorn Park. Notes on the drawings clearly indicate which sections of infrastructure is applicable to each construction stage. For this tender, Phase 1A is applicable.

PS-4 CONSTRUCTION MANAGEMENT REQUIREMENTS

4.1 General

The Contractor is referred to SANS 1921: 2004 parts 1, 2 and 3: Construction and Management Requirements for Works Contracts. These specifications shall be applicable to the contract under consideration and the Contractor shall comply with all requirements relevant to the project.

Certain aspects however require further attention as described hereafter.

4.1.7 Drawings *(Read with SANS 1921 – 1: 2004 clauses 4.1.7; 4.1.11 & 4.1.12)*

The requirements for drawings, information and calculations for which the Contractor is responsible are: *None*.

The reduced drawings which form part of the tender documents shall be used for tendering purposes only.

The contractor shall be supplied with three complete paper copies of the construction drawings free of charge. The Contractor shall, at his own expense, produce there from all further paper prints required for the construction of the work.

At the completion of the Contract, the Contractor shall return to the Engineer all drawings, provided or made, during the contract period. Any information which the Contractor has control over and which is required by the Resident Engineer to complete the as-built drawings shall be made available to the Resident Engineer before the completion certificate is issued.

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Only written dimensions may be used. Dimensions are not to be scaled from drawings unless ordered by the Engineer. The Engineer will supply all figures / dimensions which are not shown on the drawings. The levels or dimensions given on the drawings are subject to confirmation on site. The Contractor shall submit all levels and dimensions to the Engineer for confirmation before he commences with any structural construction work. The Contractor shall also check all clearances which are given on the drawings and inform the Engineer of any conflicting dimensions.

Any destination names on road signs which may be indicated on the drawings are subject to confirmation by the Engineer before these signs are manufactured.

4.2 Responsibilities for design and construction

Consulting Engineer

The Consulting engineer responsible for the design in accordance with the specification is: *NKP Consulting Engineers (Pty) Ltd.*

4.3 Planning and Programme (Read with SANS1921-1:2004 clause 4.3)

Preliminary programme

The Contractor shall include with his tender a preliminary programme on the prescribed form to be completed by all Tenderers. The programme shall be in the form of a simplified bar chart with sufficient details to show clearly how the works will be performed within the time for completion as stated in the Contract Data.

Tenderers may submit tenders for an alternative Time for Completion in addition to a tender based on the specified Time for Completion. Each such alternative tender shall include a preliminary programme similar to the programme above for the execution of the works and shall motivate his proposal clearly by stating all the financial implications of the alternative completion time.

The Contractor shall be deemed to have allowed fully in his tendered rates and prices as well as in his programme for all possible delays due to normal adverse weather conditions and special non-working days as specified in the Special Conditions of Contract, in the Project Specifications and in the Contract Data.

The following constraints shall be considered in preparing the preliminary construction programme which must be submitted with the Tender. These same constraints shall apply to the final construction programme.

1. The Contract time is **8 months**. Plant and personnel requirements to complete the project within the allocated duration must be incorporated in the Tender.
2. The relocation of services
3. Ancillary works by Emerging Contractors

Programme in terms of Clause 5.6 of the General Conditions of Contract

It is essential that the construction programme, which shall conform in all respects to Clause 5.6 of the General Conditions of Contract 2015 edition, be furnished within the time stated in the Contract Data. The preliminary programme to be submitted with the tender shall be used as basis for this programme. The Contractor's attention is also drawn to clause 5.7.1 of the General Conditions of Contract.

4.4 Quality Assurance (QA) *(Read with SANS 1921 – 1: 2004 clause 4.4)*

The Contractor will be solely responsible to produce work that complies with the Specifications to the satisfaction of the Engineer. To this end it will be the full responsibility of the Contractor to institute an appropriate Quality Assurance (QA) system on site. The Engineer will audit the Contractor's quality assurance (QA) system on a regular basis to verify that adequate independent checks and tests are being carried out and to ensure that the Contractor's own control is sufficient to identify any possible quality problems which could cause a delay or failure.

The Contractor shall ensure that efficient supervisory staff, the required transport, instruments, equipment and tools are available to control the quality of his own workmanship in accordance with his QA-system. His attention is drawn to the fact that it is not the duty of the Engineer or the Engineer's representative to act as foreman or surveyor.

4.6 Management and disposal of water *(Read with SANS 1921 - 1 : 2004 clause 4.6)*

The Contractor shall pay special attention to the management and disposal of water and stormwater on the site. It is essential that all completed works or parts thereof are kept dry and properly drained. Claims for delay and for repair of damage caused to the works as a result of the Contractor's failure to properly manage rain and surface water, will not be considered.

**4.10 Earthworks,
Borrow pits and spoil areas** *(Read with SANS 1921 - 1 : 2004 clause 4.10)*

The borrow pits to be used for this contract shall be pointed out at the Site Inspection. The Contractor shall be permitted to use only those borrow pits approved by the Engineer. Borrow pit investigation and material testing as incorporated in the design, is given in good faith. The contractor shall confirm this material quality prior to the material's use on site.

The spoil sites shall be determined on site in conjunction with the Engineer, the PLC, and the local communities. The Contractor shall be permitted to use only those spoil areas approved by the Engineer. Should the Contractor wish to use any other tip area for the disposal of soil, rubble, vegetation, etc, its use shall be subject to the approval of the Engineer and the landowner.

4.11 Testing *(Read with SANS 1921 – 1 : 2004 clause 4.11)***Process control**

The Contractor shall arrange for all tests required for process control to be done by a laboratory acceptable to and approved by the Engineer.

The Contractor may establish his own laboratory on site or he may employ the services of an independent commercial laboratory. Whatever method is used, the Contractor must submit the results of tests carried out on materials and workmanship when submitting work for acceptance by the Engineer. The costs for these tests shall be deemed to be included in the relevant rates and no additional payment will be made for testing as required.

Acceptance control

The process control test results submitted by the Contractor for approval of materials and workmanship may be used by the Engineer for acceptance control. However, before accepting any work, the Engineer may have further control tests carried out by a laboratory of his choice. The cost of such additional tests will be covered by a provisional sum provided in the schedule of quantities, but tests that failed to confirm compliance with the specifications, will be regarded as process control and for the account of the

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Contractor.

4.14 Site Establishment *(Read with SANS 1921 - 1 : 2004 clause 4.14)*
Contractor's camp site and depot

The Contractor is responsible to provide a suitable site for his camp and to provide accommodation for his personnel and labourers. If the Employer can make any specific site available to the Contractor, such site will be pointed out to the Contractor.

The chosen site shall be subject to the approval of the Engineer, the local Tribal Authorities and the Project Steering Committee (PSC). Possible locations for a campsite shall be pointed out at the Site inspection. The Contractor shall conform to all local authority, environmental and industrial regulations.

The Contractor shall make his own arrangements concerning the supply of electrical power and all other services. No direct payment shall be made for the provision of electrical and other services. The cost thereof shall be deemed to be included in the rates and amounts tendered for the various items of work for which these services are required.

The Contractor shall provide security watchmen for the contract as he deems fit at no extra cost for the Employer. The Contractor must ensure that all his employees as well as the employees of his subcontractors are able to identify themselves as members of the construction team.

Accommodation of Employees

No employees except for security guards will be allowed to sleep or be accommodated on the site in urban areas.

No housing is available for the Contractor's employees and the Contractor shall make his own arrangements to house his employees and to transport them to site.

No informal housing or squatting will be allowed.

The Contractor shall provide the necessary ablution facilities at his camp site and the site of the works for the use of his employees. Chemical toilets only will be allowed where temporary facilities have to be provided.

4.15 Survey beacons *(Read with SANS 1921 - 1 : 2004 clause 4.15)*

The Contractor shall take special precautions to protect all permanent survey beacons or pegs such as bench-marks, stand boundary pegs and trigonometrical beacons, regardless whether such beacons or pegs were placed before or during the execution of the Contract. If any such beacons or pegs have been disturbed by the Contractor or his employees, the Contractor shall have them replaced by a registered land surveyor at his own cost.

4.17 Existing Services *(Read with SANS 1921 - 1 : 2004 clause 4.17)*

The Contractor shall make himself acquainted with the position of all existing services before any excavation or other work likely to affect the existing services is commenced.

The Contractor will be held responsible for any damage to known existing services caused by or arising out of his operations and any damage shall be made good at his own expense. Damage to unknown services shall be repaired as soon as possible and liability shall be determined on site when such damage should occur.

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Services belonging to the following service owners are indicated on the drawings:

<u>Service owner</u>	<u>Type of service</u>
Eskom/municipality	Electricity lines

A provisional amount is included in the bill of quantities for the protection of services.

Prior to commencing construction activities in a particular area, the Contractor shall also diligently enquire of local landowners/farmers for access to the pipeline servitude. The Contractor shall take note of the requirements of clause 1202 of the standard specifications with regard to services.

4.18 Health and Safety (*Read with SANS 1921 - 1: 2004 clause 4.18*)

4.18.1 General statement

It is a requirement of this contract that the Contractor shall provide a safe and healthy working environment and to direct all his activities in such a manner that his employees and any other persons who may be directly affected by his activities, are not exposed to hazards their health and safety. To this end the Contractor shall assume full responsibility to conform to all the provisions of the Occupational Health and Safety Act No 85 and Amendment Act No 181 of 1993, and the OHS Act 1993 Construction Regulations 2014 issued on 07 February 2014 by the Department of Labour.

For this contract, the Contractor is required to confirm his status as mandatory and employer in his own right for the execution of the contract by entering into an agreement with the Employer in terms of the Occupational Health and Safety Act in the form as included in Part V of the Returnable Schedules.

Health and Safety Specifications and Plans

a) Employer's Health and Safety Specification

The Employer's Health and Safety Specification will be included in the tender documents as part of the Project Specifications.

b) Tenderer's Health and Safety Plan

The Tenderer shall submit with his tender his own documented Health and Safety Plan he proposes to implement for the execution of the work under the contract. His Health and Safety Plan must at least cover the following:

- (i) a proper risk assessment of the works, risk items, work methods and procedures in terms of Regulations 7 to 28;
- (ii) pro-active identification of potential hazards and unsafe working conditions;
- (iii) provision of a safe working environment and equipment;
- (iv) statements of methods to ensure the health and safety of subcontractors, employees and visitors to the site, including safety training in hazards and risk areas (Regulation 5);
- (v) monitoring health and safety on the site of works on a regular basis, and keeping of records and registers as provided for in the Construction Regulations;
- (vi) details of the Construction Supervisor, the Construction Safety Officers and other competent persons he intends to appoint for the construction works in terms of Regulation 6 and other applicable regulations; and
- (vii) details of methods to ensure that his Health and Safety Plan is carried out effectively in accordance with the Construction Regulations 2014.

The Contractor's Health and Safety Plan will be subject to approval by the Employer, or amendment if

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necessary, before commencement of construction work. The Contractor will not be allowed to commence work, or his work will be suspended if he had already commenced work, before he has obtained the Employer's written approval of his Health and Safety Plan.

Time lost due to delayed commencement or suspension of the work as a result of the Contractor's failure to obtain approval for his safety plan, shall not be used as a reason to claim for extension of time or standing time and related costs

Cost of compliance with the OHS Act and Construction Regulations

The rates and prices tendered by the Contractor shall be deemed to include all costs for conforming to the requirements of the Act, the Construction Regulations and the Employer's Health and Safety Specification as applicable to this contract.

Should the Contractor fail to comply with the provisions of the Construction Regulations, he will be liable for penalties as provided in the Construction Regulations and in the Employer's Health and Safety Specification.

4.19 Management of the environment (*Read with SANS 1921 - 1 : 2004 clause 4.19*)

Respect for the environment is an important aspect of this contract and the Contractor shall pay special attention to the following:

(a) Natural Vegetation

The Contractor shall confine his operation to the limits of the road reserve for the purpose of constructing the works and where applicable detours, shall be sited in consultation with the Engineer and the local communities.

Only those trees and shrubs directly affected by the works and such others as the Engineer may direct in writing shall be cut down and stumped. The natural vegetation, grassing and other plants shall not be disturbed other than in areas where it is essential for the execution of the work or where directed by the Engineer.

(b) Fires

The Contractor shall comply with the statutory and local fire regulations. He shall also take all necessary precautions to prevent any fires. In the event of fire, the Contractor shall take active steps to limit and extinguish the fire and shall accept full responsibility for damages and claims resulting from such fires which may have been caused by him or his employees.

(c) Environmental Management Plan

In addition to the above all requirements according to the Environmental Management Plan as detailed in C3.3, Particular Specifications, will be adhered to.

PS-5 MANAGEMENT OF THE WORKS

5.1 Applicable SANS 1921 standards

The following parts of SANS 1921 Construction works standards and associated specification data are applicable to the works:

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- 1) SANS 1921-1: General engineering and construction works
- 2) SANS 1921-2: Accommodation of traffic
- 3) SANS 1921-6: HIV/Aids awareness

The abovementioned South African National Standards make several references to the Specification Data for data, provisions and variations that make these standards applicable to this contract. The Specification Data shall have precedence in the interpretation of any ambiguity or inconsistency between it and these standards.

Each item of Specification Data given below is cross-referenced to the clause in the standard to which it mainly applies.

SANS 1921-1, Construction and management requirements for works contracts – Part 1: General engineering and construction works	
Clause	Specification data
Essential data	
4.1.7	There are no requirements for drawings, information and calculations for which the contractor is responsible
4.2.1	The responsibility strategy assigned to the contractor for the works is A .
4.2.2	The structural engineer is NKP Consulting Engineers (Pty) Ltd.
4.3.1	<p>The planning, programme and method statements are to comply with the following:</p> <ol style="list-style-type: none"> a) The Contract time is 6 months. b) Plant and personnel requirements to complete the project in 6 months shall be incorporated. c) A high standard of traffic accommodation. d) The relocation of services (if required). e) Ancillary works by Emerging Contractors. <p>State requirements for format of programme, level of detail, critical path activities and their dependencies, frequency of updating, etc., if not provided in the contract data. Provide particulars of phased completion, programme constraints, milestone dates for completion, etc., as necessary.</p> <p>State requirements for sequencing, as required.</p> <p>State any requirements for software for programmes.</p>
4.3.3	The notice period for inspection is 2 Days
4.12.2	<p>The samples of materials, workmanship and finishes that the contractor is to provide and deliver to the employer are:</p> <p>None</p>

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4.14.3	<p>The office accommodation, equipment, accommodation for site meetings and other facilities for use by the employer and his agents are:</p> <ol style="list-style-type: none"> 1) Site office which shall be used for site meetings and for the contractor's use. Such an office shall comprise a minimum of 48m² in area and 3 m high, be ventilated, have good lamination, must be reasonably sound proof, and have a hard floor construction. It shall be furnished with a desk on which drawings can be rolled open and on which there is sufficient writing space and sufficient temporary chairs or benches to accommodate all persons present at site meetings. 2) Engineer's supervisory staff shall be provided with rented accommodation. 3) Engineer's supervisory staff shall be provided with cellular phones. 4) The office of the engineer shall be equipped with 2 laptop computers and colour laser printer. 5) The office of the engineer shall be equipped with a copier, fax and e-mail facilities to facilitate communication. 6) The office of the engineer shall be equipped with HVAC facilities necessary for the climatic condition. 7) The office of the engineer shall be equipped with two office desks and chairs as well as filing units for files and drawings. 8) A board room will be provided and equipped to accommodate the employer, his agent and the contractor in meetings.
4.14.5	The Contractor is required to provide latrine and ablution facilities.
4.14.6	<p>The requirements for the provision and erection of contract sign boards as specified by the client, and included in the drawings are:</p> <ol style="list-style-type: none"> 1) The boards must comply with the official standard type signboard of the Employer and be at least 2750 x 1800 mm high. Two (2) boards are required. 2) The boards must be constructed with a firm flat exposed face using suitable material of firm construction, painted and lettered according to the standard drawings available from the Employer on request and mounted on sturdy pipe-standards at a height of 1800 mm above natural ground level.
4.17.1	<p>The requirements for the termination, diversion or maintenance of existing services are:</p> <p>The Contractor shall make himself acquainted with the position of all existing services before any excavation or other work likely to affect the existing services is commenced.</p> <p>The Contractor will be held responsible for any damage to known existing services caused by or arising out of his operations and any damage shall be made good at his own expense. Damage to unknown services shall be repaired as soon as possible and liability shall be determined on site when such damage should occur.</p> <p>Prior to commencing construction activities in a particular area, the Contractor shall also diligently enquire of local landowners as to whether there are any other known services which have not been shown on the drawings but which may be affected by the construction activities in that area, and any such services shall be brought to the attention of the Engineer immediately.</p> <p>The Contractor shall take note of the requirements of clause 1202 of the standard specifications with regard to services.</p> <p>The Contractor shall fulfil all wayleaves requirements/permits prior to and during construction.</p>

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4.17.3	<p>Services which are known to exist on the site are:</p> <ol style="list-style-type: none"> 1.... Electricity poles 2.... Fences 3.... Water pipes 										
4.17.4	<p>The requirements for detection apparatus are:</p> <p>Where applicable, the Contractor shall use appropriate detection equipment to locate underground services. The Engineer shall be informed immediately of such activities.</p>										
Variations											
None											
Additional clauses											
<p>1 Site meetings and procedures</p> <p>The Employer's Representative and the Contractor shall hold meetings relating to the progress of the works at regular intervals and at other such times as may be necessary. The Contractor shall attend all site meetings and shall ensure that all persons under his jurisdiction are notified timeously of all site meetings should the Employer's Representative require their attendance at such meetings.</p> <p>The Contractor shall keep on site a set of minutes of all site meetings, daily records of resources (people and equipment employed), a site instruction book, a complete set of contract working drawings and a copy of the procurement document and make these available at all reasonable times to all persons concerned with the contract.</p> <p>2 Water and electricity</p> <p>The Employer does not warrant that any water supply or electricity supply that may exist is adequate for the proper execution of the works. The responsibility strategies in terms of the tabulation below that will apply to the contract is:</p>											
<table border="1" style="width: 100%;"> <thead> <tr> <th style="width: 30%;">Service</th> <th>Contractor responsibility</th> </tr> </thead> <tbody> <tr> <td>Water</td> <td>The Contractor is to provide, and remove and make good upon completion, all the necessary temporary plumbing connections and purchase water from the local authority for the works at his own cost.</td> </tr> <tr> <td>Electricity</td> <td>The Contractor is to provide, and remove and make good upon completion, all the necessary temporary electrical connections and installations and purchase electricity from the local authority / Eskom for the works at his own cost.</td> </tr> <tr> <td>Telecommunication</td> <td>The Contractor is to provide, and remove and make good upon completion, all the necessary temporary telecommunication connections and installations and purchase bandwidth/units from the supplier for the works at his own cost.</td> </tr> <tr> <td>Sanitation</td> <td>The Contractor is to provide, and remove and make good upon completion, all the necessary temporary plumbing connections for the works at his own cost. The contractor shall ensure the provision of this service at the site camp and at accommodation of contractor's employees</td> </tr> </tbody> </table>		Service	Contractor responsibility	Water	The Contractor is to provide, and remove and make good upon completion, all the necessary temporary plumbing connections and purchase water from the local authority for the works at his own cost.	Electricity	The Contractor is to provide, and remove and make good upon completion, all the necessary temporary electrical connections and installations and purchase electricity from the local authority / Eskom for the works at his own cost.	Telecommunication	The Contractor is to provide, and remove and make good upon completion, all the necessary temporary telecommunication connections and installations and purchase bandwidth/units from the supplier for the works at his own cost.	Sanitation	The Contractor is to provide, and remove and make good upon completion, all the necessary temporary plumbing connections for the works at his own cost. The contractor shall ensure the provision of this service at the site camp and at accommodation of contractor's employees
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		contractor's employees.	
	Waste disposal	The Contractor is to provide, and remove and make good upon completion, all the necessary temporary waste disposal means for the works at his own cost.	
	Security services	The Contractor is to provide, and remove and make good upon completion, all the necessary temporary security arrangements and purchase such goods and services for the works at his own cost.	

Clause	Specification Data
Essential Data:	
5.1	The depth of trenches which are to be excavated by hand is 1.5 metres.
Additional clauses:	
1	<p>Stone pitching and rubble concrete masonry</p> <p>All stone required for stone pitching and rubble concrete masonry, whether grouted or dry, shall be collected, loaded, off loaded and placed by hand. Sand and stone shall be hauled to its point of placement by means of wheelbarrows where the haul distance is not greater than 150m. Grout shall be mixed and placed by hand.</p>
2	<p>Manufactured Elements</p> <p>Elements manufactured or designed by the Contractor, such as manhole rings and cover slabs, precast concrete planks and pipes, masonry units and edge beams shall not individually, have a mass of more than 320kg. In addition, the items shall be large enough so that four workers can conveniently and simultaneously acquire a proper hand hold on them.</p>
SANS 1921-6, Construction and management requirements for works contracts – Part 6: HIV/AIDS awareness.	
4.2.1(a)	A qualified service provider is a service provider that is one that is accredited or provisionally accredited training service provider in the HIV/AIDS field. A list of accredited service providers can be obtained from the Construction SETA (CETA) (Tel: 011-265 5900), Health and Welfare SETA (HWSETA) (011-622 6852) or on the Health and Welfare SETA website: www.hwseta.org.za .
4.2.1(a)	The HIV/AIDS awareness programme is to be repeated at three (3) month intervals throughout the duration of the contract. (Two times in total, including the initial one at the start of the contract.)
Additional clauses	
	The duration of each workshop is not to be less than 2 ½ hours .

5.2 Particular / generic specifications

The management of the site shall be in accordance with the provisions of the South-African National Standards (SABS).

5.3 Recording of weather

The Contractor shall erect an effective rainfall gauge on the site and record the daily rainfall figures in a book. Such book shall be handed to the employer's representative for his signature no later than 12 days after rain that is considered to justify an extension of time occurs.

5.4 Unauthorised persons

The Contractor shall keep unauthorized persons from the works at all times. Under no circumstances may any person except guards be allowed to sleep on the building site.

5.5 Management meetings

Project management meetings will be held once a month. This meeting will be attended by the representatives of the Employer, the representatives of the contractor as well as the representatives of the consultant.

All representatives at the meeting(s) must be delegated to take binding decisions, although it may be sometimes necessary to refer some decisions to higher authority.

Any claim or intention to claim must be brought to the attention of the Employer / Engineer / consultant in writing and within 28 days of the cause of the delay or where contractually required any specific shorter period. Not complying with this instruction / procedure will be regarded as relinquishment of the claim.

All important matters must be brought to the attention of the meeting timorously and supported by a written notification.

5.6 Forms for contract administration

Forms for contract administration will be completed by the consultant's staff on site.

5.7 Electronic payments

The contractor is to fulfil the electronic payment requirements of the Client to be paid electronically.

The Contractor is also advised to pay all his staff electronically to avoid handling large quantities of money on site.

5.8 Daily records

The contractor is required to keep a site diary in which to record daily occurrences on site.

5.9 Payment certificates

The Contractor shall be entitled to receive a monthly progress payment, which shall be based on a progress on site and payment certificate issued by the Consultant.

The Contractor shall on monthly basis submit a monthly statement of all moneys due to him. On such a statement he shall also include the all materials on site. The statement submitted by the contractor

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shall indicate measured quantities. The consultant shall submit to the Molemole Local Municipality a signed certificate which indicates the amount due to the contractor.

PS-6 PROCUREMENT

Preferential procurement procedures

Direct preference is given based on the Targeted Enterprise status of the tenderer. Functionality points are allocated based on the Contract Participation Goal offered in terms of the engagement of Local Enterprises and Local Labour.

Scope of mandatory subcontract work

It is mandatory to subcontract work of at least thirty percent (30%) of the value to the local enterprises to achieve the Contract Participation Goal. The choice of who and for which portions of the work he does is to be agreed with the Project Steering Committee or the Community Forum in liaison with the Liaison Officer and the Ward Councillor. The Contractor commits himself to work closely with the Community Forum, who will compile a local resource database to assist the Contractor in maximizing the use of local resources. In inviting local enterprises to tender for subcontracted work, the Contractor shall include the local enterprises identified by the Community Forum, except if they are deemed by the Contractor to be unfit to provide the service or deliver the goods at the required quality, considering the entrepreneurial training available to empower them. In the event of a dispute between the Community Forum and the Contractor as to the ability of an identified service local enterprise for a particular subcontract, the final choice shall rest with the Contractor, following discussions with the CLO and the Engineer.

It is mandatory that a minimum of one hundred (100) local labourers be employed on this project over the duration of the project. Labour force circulation shall remain under the management of the main contractor and the prerogative/ guidance of the PSC.

PS-7 CONSTRUCTION

Applicable SANS 2001 standards for construction works

There are no SANS 2001 standards applicable.

Applicable national and international standards

Although not bound in nor issued with this document, the following standardised specifications will form part of the contract document:
SABS/SANS 1200.

Applicable SA National Standards (SANS)

Reference is made to certain provisions of:

- | | |
|-------------|--|
| SANS 1921-5 | Construction and management requirements for works contracts:
Earthworks activities which are to be performed by hand |
| SANS 1914-5 | Targeted construction procurement: Participation of targeted labour |

These Specifications are not issued with this volume but are available at the Contractor's expense from: Standards South Africa,

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1 Dr Lategan Road, Groenkloof
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PS-8 EPWP LABOUR- INTENSIVE SPECIFICATION

EPWP LABOUR-INTENSIVE SPECIFICATION

Employer's objective

The objective of the Employer is to optimise the usage of local labour where possible.

8.1 Labour-intensive works

Labour-intensive works comprise the activities described in the SANS 1921-5, Earthworks activities which are to be performed by hand, and its associated specification data. Such works shall be constructed using local workers who are temporarily employed in terms of this scope of work.

8.1.1 Labour-intensive competencies of supervisory and management staff

Contractors having a CIDB contractor grading of 6CE and higher shall only engage supervisory and management staff in labour intensive works who have either completed, or for the period 1 April 2004 to 30 June 2006, are registered for training towards, the skills programme outlined in Table 1.

The managing principal of the Contractor, namely, a sole proprietor, the senior partner, the managing director or managing member of a close corporation, as relevant, having a Contractor grading designation of 1CE, 2CE, 3CE and 4CE shall have personally completed, or for the period 1 April 2004 to 30 June 2006 be registered on a skills programme for the NQF level 2. All other site supervisory staff in the employ of such Contractors must have completed, or for the period 1 April 2004 to 30 June 2006 be registered on a skills programme for, the NQF level 2 unit standards or NQF level 4 unit standards.

Table 1: Skills programme for supervisory and management staff

Personnel	NQF level	Unit standard titles	Skills programme description
Team leader / supervisor	2	Apply Labour Intensive Construction Systems and Techniques to Work Activities	This unit standard must be completed, and } any one of these 3 unit standards
		Use Labour Intensive Construction Methods to Construct and Maintain Roads and Stormwater Drainage	
		Use Labour Intensive Construction Methods to Construct and Maintain Water and Sanitation Services	
		Use Labour Intensive Construction Methods to Construct, Repair and Maintain Structures	
Foreman/ supervisor	4	Implement labour Intensive Construction Systems and Techniques	This unit standard must be completed, and

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		Use Labour Intensive Construction Methods to Construct and Maintain Roads and Stormwater Drainage	} any one of these 3 unit standards
		Use Labour Intensive Construction Methods to Construct and Maintain Water and Sanitation Services	
		Use Labour Intensive Construction Methods to Construct, Repair and Maintain Structures	
Site Agent / Manager (i.e the contractor's most senior representative that is resident on the site)	5	Manage Labour Intensive Construction Processes	Skills Programme against this single unit standard

8.1.2 Employment of unskilled and semi-skilled workers in labour-intensive works

8.1.2.1 Requirements for the sourcing and engagement of labour.

8.1.2.1.1 Unskilled and semi-skilled labour required for the execution of all labour-intensive works shall be engaged strictly in accordance with prevailing legislation and SANS1914-5, Participation of Targeted Labour.

8.1.2.1.2 The rate of pay set for the EPWP is as determined by the Civil Engineering Industry task rates for the Nelspruit area.

8.1.2.1.3 Tasks established by the contractor must be such that:

- a) the average worker completes 5 tasks per week in 40 hours or less; and
- b) the weakest worker completes 5 tasks per week in 55 hours or less.

8.1.2.1.4 The contractor must revise the time taken to complete a task whenever it is established that the time taken to complete a weekly task is not within the requirements of 8.1.2.1.3.

8.1.2.1.5 The Contractor shall, through all available community structures, inform the local community of the labour-intensive works and the employment opportunities presented thereby. Preference must be given to people with previous practical experience in construction and / or who come from households:

- a) where the head of the household has less than a primary school education;
- b) that have less than one full time person earning an income;
- c) where subsistence agriculture is the source of income.
- d) those who are not in receipt of any social security pension income

8.1.2.1.6 The Contractor shall endeavour to ensure that the expenditure on the employment of temporary workers is in the following proportions:

- a) 60 % women;
- b) 20% youth who are between the ages of 18 and 25; and
- c) 2% on persons with disabilities.

8.1.2.2 Specific provisions pertaining to SANS 1914-5

8.1.2.1 Definitions

Targeted labour: Unemployed persons who are employed as local labour on the project.

8.1.2.2 Contract participation goals

8.1.2.2.1 Contract participation goals have been specified for the contract. The contract participation goal shall be measured in the performance of the contract to enable the employment provided to targeted labour to be quantified.

8.1.2.2.2 The wages and allowances used to calculate the contract participation goal shall, with respect to both time-rated and task rated workers, comprise all wages paid, and any training allowance paid in respect of agreed training programmes.

8.1.2.3 Terms and conditions for the engagement of targeted labour

Further to the provisions of clause 3.3.2 of SANS 1914-5, written contracts shall be entered into with targeted labour.

8.1.2.2.4 Variations to SANS 1914-5

8.1.2.2.4.1 The definition for net amount shall be amended as follows:

Financial value of the contract upon completion, exclusive of any value added tax or sales tax which the law requires the employer to pay the contractor.

8.1.2.2.4.2 The schedule referred to in labour intensive construction shall in addition reflect the status of targeted labour as women, youth and persons with disabilities and the number of days of formal training provided to targeted labour.

8.1.2.2.5 Training of targeted labour

8.1.2.2.5.1 The contractor shall provide all the necessary on-the-job training to targeted labour to enable such labour to master the basic work techniques required to undertake the work in accordance with the requirements of the contract in a manner that does not compromise worker health and safety.

8.1.2.2.5.2 The cost of the formal training of targeted labour, will be funded by the provincial office of the Department of Labour. This training should take place as close to the project site as practically possible. The contractor must access this training by informing the relevant provincial office of the Department of Labour in writing, within 14 days of being awarded the contract, of the likely number of persons that will undergo training and when such training is required. The employer must be furnished with a copy of this request.

8.1.2.2.5.3 A copy of this training request made by the contractor to the DOL provincial office must also be faxed to the EPWP Training Director in the Department of Public Works - Cinderella Makunike, Fax Number 012 328 6820 or email cinderella.makunike@dpw.gov.za Tel:083 677 4026.

8.1.2.2.5.4 The contractor shall be responsible for scheduling the training of workers and shall take all reasonable steps to ensure that each beneficiary is provided with a minimum of six (6) days of formal training if he/she is employed for 3 months or less and a minimum of ten (10) days if he she is employed for 4 months or more.

8.1.2.2.5.5 The contractor shall do nothing to dissuade targeted labour from participating in training programmes.

8.1.2.2.5.6 An allowance equal to 100% of the task rate or daily rate shall be paid by the

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contractor to workers who attend formal training, in terms of 8.1.2.2.5.4 above.

- 8.1.2.2.5.7 Proof of compliance with the requirements of 8.1.2.2.5.2 to 8.1.2.2.5.6 must be provided by the Contractor to the Employer prior to submission of the final payment certificate.

PS-9 GENERIC LABOUR- INTENSIVE SPECIFICATION

The Generic Labour-intensive specification below (informed by SANS 1921-5, Construction and management requirements for works contracts - Part 5: Earthworks) covers activities which are to be performed by hand and should be included in the scope of works without amendment or modification as set out below.

This specification establishes general requirements for activities which are to be executed by hand involving the following:

- trenches having a depth of less than 1.5 metres
- stormwater drainage
- roads
- sidewalks and non-motorised transport infrastructure
- water and sanitation

Precedence

Where this specification is in conflict with any other standard or specification referred to in the Scope of Works to this Contract, the requirements of this specification shall prevail.

Hand excavatable material

Hand excavatable material is:

a) granular materials:

- i) whose consistency when profiled may in terms of table 2 be classified as very loose, loose, medium dense, or dense; or
- ii) where the material is a gravel having a maximum particle size of 10mm and contains no cobbles or isolated boulders, no more than 15 blows of a dynamic cone penetrometer is required to penetrate 100mm;

b) cohesive materials:

- i) whose consistency when profiled may in terms of table 2 be classified as very soft, soft, firm, stiff and stiff / very stiff; or
- ii) where the material is a gravel having a maximum particle size of 10mm and contains no cobbles or isolated boulders, no more than 8 blows of a dynamic cone penetrometer is required to penetrate 100mm;

Note

- 1) A boulder is material with a particle size greater than 200mm, a cobble and gravel is material between 60 and 200mm.
- 2) A dynamic cone penetrometer is an instrument used to measure the in-situ shear resistance of a soil comprising a drop weight of approximately 10 kg which falls through a height of 400mm and drives a cone having a maximum diameter of 20mm (cone angle of 60° with respect to the horizontal) into the material being used.

Table 2: Consistency of materials when profiled			
GRANULAR MATERIALS		COHESIVE MATERIALS	
CONSISTENCY	DESCRIPTION	CONSISTENCY	DESCRIPTION
Very loose	Crumbles very easily when scraped with a geological pick.	Very soft	Geological pick head can easily be pushed in as far as the shaft of the handle.
Loose	Small resistance to penetration by sharp end of a geological pick.	Soft	Easily dented by thumb; sharp end of a geological pick can be pushed in 30-40 mm; can be moulded by fingers with some pressure.
Medium dense	Considerable resistance to penetration by sharp end of a geological pick.	Firm	Indented by thumb with effort; sharp end of geological pick can be pushed in up to 10 mm; very difficult to mould with fingers; can just be penetrated with an ordinary hand spade.
Dense	Very high resistance to penetration by the sharp end of a geological pick; requires many blows for excavation.	Stiff	can be indented by thumb-nail; slight indentation produced by pushing geological pick point into soil; cannot be moulded by fingers.
Very dense	High resistance to repeated blows of a geological pick.	Very stiff	Indented by thumb-nail with difficulty; slight indentation produced by blow of a geological pick point.

Trench excavation

All hand excavatable material in trenches having a depth of less than 1,5 metres shall be excavated by hand.

Compaction of backfilling to trenches (areas not subject to traffic)

Backfilling to trenches shall be placed in layers of thickness (before compaction) not exceeding 100mm. Each layer shall be compacted using hand stampers;

- a) to 90% Mod AASHTO;
- b) such that in excess of 5 blows of a dynamic cone penetrometer (DCP) is required to penetrate 100 mm of the backfill, provided that backfill does not comprise more than 10% gravel of size less than 10mm and contains no isolated boulders, or
- c) such that the density of the compacted trench backfill is not less than that of the surrounding undisturbed soil when tested comparatively with a DCP.

Excavation

All excavatable material including topsoil classified as hand excavatable shall be excavated by hand. Harder material may be loosened by mechanical means prior to excavation by hand. Any material which presents the possibility of danger or injury to workers shall not be excavated by hand.

Clearing and grubbing

Grass and bushes shall be cleared by hand.

Shaping

All shaping shall be undertaken by hand.

Loading

All loading shall be done by hand. Haulage equipment should be selected in a manner that allows loading by hand to the greatest extent possible.

Haul

Excavation material shall be hauled to its point of placement by means of wheelbarrows where the haul distance is not greater than 150m.

Offloading

All material, however transported, is to be off-loaded by hand, unless tipper-trucks are utilised for haulage.

Spreading

All material shall be spread by hand.

Compaction

Small areas may be compacted by hand provided that the specified compaction is achieved. Appropriate rollers should be used where higher (than can be achieved by hand) levels of compaction are required or for large areas.

Grassing

All grassing shall be undertaken by sprigging, sodding, or seeding by hand.

Stone pitching and rubble concrete masonry

All stone required for stone pitching and rubble concrete masonry, whether grouted or dry, must be collected, loaded, off loaded and placed by hand. Sand and stone shall be hauled to its point of placement by means of wheelbarrows where the haul distance is not greater than 150m. Grout shall be mixed and placed by hand.

Manufactured Elements

Elements manufactured or supplied by the Contractor, such as manhole rings and cover slabs, precast concrete planks and pipes, masonry units and edge beams shall not individually, have a mass of more than 320kg. Where the mass of an element exceeds 55 kg, consideration should be given to the size of the element relative to its total mass related to the number of workers who would be needed to lift such mass.

PART B: AMENDMENTS TO THE STANDARD SPECIFICATIONS

Introductory Notes to Tenderer

This part of the project specifications deals with matters relating to the standard specifications. Where reference is made in the standard specifications to the project specifications this part shall also contain the relevant information e.g. the requirements where a choice of materials or construction methods are provided for in the standard specifications.

- 1. In certain clauses the Standard Specifications allow a choice to be specified in the project specifications between alternative materials or methods of construction and for additional requirements to be specified to suit a particular contract. Details of such alternatives or additional requirements applicable to this contract are contained in this part of the project specifications. It also contains some additional specifications required for this particular contract.**
- 2. The number of each clause and each payment item in this part of the project specifications consists of the prefix B followed by a number corresponding to the number of the relevant clause or payment item in the standard specifications where applicable. The number of a new clause or a new payment item which does not form part of a clause or a payment item in the standard specifications and which is included here, is also prefixed by B followed by a new number. The new numbers follow on the last clause or item number used in the relevant section of the standard specifications. New payment items introduced do not necessarily replace existing items which may still be used for works on any PART(S) of the project.**
- 3. The tenderer shall note that the standard COLTO specification is based on the COLTO General Conditions of Contract. References to specific COLTO General Conditions of Contract clauses in the specifications shall be exchanged for the equivalent clause in the SAICE Conditions of Contract as amended by the Particular Conditions of Contract to be found in C3.2.1 of this section which are not necessarily inclusive with omissions possible. The Employer assumes no responsibility for the contractor's interpretation of which is the correct or applicable relevant clauses. Clarification in this regard can be confirmed with the Employer if deemed necessary during the tender period.**

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SECTION 1100: DEFINITIONS AND TERMS

B1115 GENERAL CONDITIONS OF CONTRACT

Replace Clause 1115 with the following:

“The General Conditions applicable to this contract are the “General Conditions of Contract for Construction Works (Third edition 2015), issued by the South African Institution of Civil Engineering (SAICE). Accordingly, all reference in the Standard Specifications to any other General Conditions of Contract (GCC) has to be amended. The Standard Specifications have been scrutinized and clauses which refer to another GCC identified. These are tabulated below together with the relevant equivalent clause in the SAICE Conditions of Contract. The context of the reference to the GCC is also noted.

Whereas every effort has been made to include all of the affected clauses in the table, there may be some omissions. In every case, however, the SAICE Conditions of Contract for Construction, as amended by the Particular Conditions of Contract in Section C1.2, Contract Data of this Volume, shall apply and the contractor shall be responsible for interpretation of the equivalent clause

CHANGES TO REFERENCES BY THE COLTO STANDARD SPECIFICATIONS TO THE COLTO GENERAL CONDITIONS OF CONTRACT AND SAICE GENERAL CONDITIONS

COLTO Standard Specification		COLTO General Conditions of Contract 1998 (GCC)		SAICE Conditions of Contract for Construction works 3 rd edition 2015	
Clause No	Page No	Clause No	Description or Reference	Clause No	Description or Reference
1115	1100-2		Definition of GCC	1	Definition of SAICE
1204	1200-2	15	Construction programme	5.6	Construction programme
1204	1200-2		General reference to GCC		Applicable to SAICE
1206	1200-3	14	Setting out of works		Not covered
1209(a)	1200-4		General references to GCC		Applicable to SAICE
1209(e)	1200-5	52(2)	Valuation of material brought onto site	6.9	Valuation of material brought onto site
1210	1200-5	54 (1)	Certificate of practical completion	5.14	Certificate of practical completion
1212(1)	1200-7	49 (2)	CPA on alternative designs		Not covered.
1215	1200-9	45 (2)	Extension of time for completion due to abnormal rainfall.	5.12	Extension of time for practical completion due to abnormal climatic conditions.
1217	1200-10	35	Care of the works	8.2	Care of the works
1303(ii)	1300-1		General reference to GCC		Applicable to SAICE
1303(iii)	1300-1	49	Price adjustment Item 13.01 (a)	6.8	Adjustment in rates and/or prices.
1303 (iii)	1300-2	49	Price adjustment Item 13.01 (b)	6.8	Adjustment in rates and/or prices.
1303 (iii)	1300-1	53	Variations exceeding 20%	6.11	Variations exceeding 15%
1303 (iii)	1300-2	53	Variations exceeding 20%	6.11	Variations exceeding 15%
1303	1300-2	12	Payment Item 13.01 (c)	6	Payments
1303	1300-2	45	Payment Item 13.01 (c)	6	Payments
1403(c) (ii)	1400-4	40 (1)	Variation for rented accommodation	6.3&6.6	Variations and provisional sums
1505	1500-3	40 (1)	Variation for temporary drainage	6.3	Variation
Item 15.08	1500-8	48	Payment of Provisional Sum	6.6	Provisional Sums
Item 15.09	1500/8	48	Payment of Provisional Sum	6.6	Provisional Sums
Item 15.11	1500-8	48	Payment of Provisional Sum	6.6	Provisional Sums

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COLTO Standard Specification		COLTO General Conditions of Contract 1998 (GCC)		SAICE Conditions of Contract for Construction works 3 rd edition 2015	
Clause No	Page No	Clause No	Description or Reference	Clause No	Description or Reference
Note (2)	3100-4	40	Payment for prospecting for materials	6.3	Variations
3204(b) (iii)	3200-2	40	Payment for oversized material	6.3	Variations
3303(b)	3300-2	2	Engineer's decisions, with reference to materials classification	3.2	Functions of the Engineer
Item 44.06	4400-3		General reference to GCC, PC Sums	6.6	Provisional Sums
Item 45.06	4500-3		General reference to GCC, PC Sums	6.6	Provisional Sums
5803 (c)	5800-3	40	Variation, for landscaping	6.3	Variations
5805 (d)	5800-4	40	Variation, for grassing	6.3	Variations
Item 58.10	5800-10	48	Payment for Extra Work	6.3 6.5	Variations Dayworks
8103 (c)	8100-1	40	Variation, for testing material	6.3	Variation, for testing material
Item 81.02	8100-26		General reference to GCC, Provisional Sums	6.6	Provisional Sums
Item 81.03	8100-26	22	Clearance of site on completion, with reference to core drilling	5.15	Clearance of site.

Amend the following clauses:

“B1131 RECYCLING

The process of recycling shall also mean the breaking up of existing pavement layers and/or the mixing of pavement layer materials with a recycling machine.

B1155 WORK IN RESTRICTED AREAS

Under this contract, no additional or extra over payment will be made for work in restricted areas.”

Add the following clauses:

“B1156 OTHER DEFINITIONS

The COLTO Standard Specification for Roads and Bridges has been written for all contractors, employers and engineers. Similarly, the works and the site are not defined and the general nature of the entities and elements that collectively constitute construction under a contract are characterized by the use of lower case letters throughout.

These project specifications continue to use lowercase spellings in order to avoid the appearance of the capitalized and non-capitalized words to describe or prescribe the same elements of work required on this project. However, for the purposes of this contract the following definitions shall apply:

Contractor

The Contractor and the contractor is the same persona defined under clause 1.1.1.9 of the Conditions of Contract, but who will only be formally identified by the formal Letter of Acceptance which will be bound into the final contract document.

Employer

The Employer and employer is the same persona and is defined in Section C1.2.2, Contract Data and clause 1.1.1.15 of the Conditions of Contract.

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Engineer

The Engineer and engineer is the same persona and is defined in Section C1.2.2, Contract Data and clause 1.1.1.16 of the Conditions of Contract.

Site

The site is defined in clause 1.1.1.29 of the Conditions of Contract. It is bound by the limits of construction as shown in the drawings or the description of the project and extends to also include the following:

All areas necessary for accommodating the traffic as prescribed in section 1500 of the specification and the drawings.

Works

The works is described in **PART C3.2** of this document and is as defined in clause 1.1.1.28 of the Conditions of Contract.”

Process Control

Process control means all testing required to be carried out by the contractor at his cost in order to ensure that the completed permanent works comply with the specifications and drawings. All such testing will be subject to inspection and approval by the engineer.

Acceptance Control

Acceptance control means whatever testing the engineer carries out over and above the process control testing already carried out by the contractor in order to decide on the acceptability of any work submitted by the contractor. Such testing will be carried out at the cost of the employer in either the engineer's laboratory or one approved by him.

B1159 AGGREGATE SIZE

Where reference is made in this specification or the standard specifications to aggregate size, nominal aggregate size or maximum aggregate size, the aggregate size as listed shall be replaced with the new corresponding aggregate size as indicated in the following table:

Aggregate size	New aggregate size
75	75
63	63
53	50
37,5	37,5
26,5	28
19	20
13,2	14
9,5	10
6,7	7.1
4,75	5
2,36	2
1,18	1 ”

SECTION 1200: GENERAL REQUIREMENTS AND PROVISIONS

B1202 SERVICES

Delete and replace the words:

“Clause 12 of the general conditions of contract” in the first sentence of the eleventh paragraph with Clause 5.6 of the General Conditions of Contract for construction works 2015 edition.”

In the second paragraph, delete the word “utility” at the end of the second line.

Add the following:

“Provision is made in the pricing schedule for relocation and/or adjustment of existing services under Provisional and Prime Cost Sums. The work is to be undertaken by the contractor himself or by a nominated sub-contractor, depending on required know-how for each case.”

B1204 PROGRAMME OF WORK

(a) General requirements

Insert the following before the first paragraph:

"A network-based programme in accordance with the precedence method shall be provided showing the various activities in such detail as may be required by the engineer. The programme shall be updated monthly in accordance with the progress made by the contractor.

Failure to comply with these requirements will entitle the employer to invoke clause 5.3.2 in the GCC. Alternatively, and upon the employers instruction, request the engineer to apply a programme based on his own assumptions for the purpose of evaluating claims for extension of time for completion of the works, or for additional compensation."

Add the following as a continuation of the first paragraph:

“In drawing up the programme the contractor shall make allowance for the following general requirements:

- (i) All special non-working days defined in Part C1.2.2 Contract Data.
- (ii) Allowance to be made in terms of clause B1215, dealing with inclement weather delays.
- (iii) No construction will be allowed during the December break.
- (iv) The requirement that chemically stabilized subbase layers have to be cured by means of water application at least three times a day for 7 days.
- (v) Phasing of construction work in terms of material utilisation will be the responsibility of the contractor, e.g. cut to fill operations, obtaining commercially supplied pavement layer materials, etc.
- (vi) Block paving to be completed prior to construction of road surface drainage concrete structures in cuttings and on fills.
- (vii) All levels, dimensions and coordinates shall be checked and confirmed on site with the Engineer before construction commences.

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- (viii) A risk assessment with specific focus on the construction activities within an urban area, pedestrian and traffic management, to be compiled with assistance from the Employer's Agent.
- (ix) Communications and liaison with the local PCS.

(b) Programme of work for rehabilitation work

Add the following new third paragraph to this section:

"In addition to the requirements of clause B1204(a) the programme of work shall include the following details:

- (i) A work breakdown structure that identifies all major activities.
- (ii) Scheduled start and end dates for each activity on every phase / section.
- (iii) Linkages between activities that clearly identify sequence, floats and critical path.
- (iv) Intended working hours and resource allocations (plant and labour).
- (v) Monthly cash flow projections.
- (vi) Key dates in respect of information required or due delivery.
- (vii) The contractor's payment weekends and non-work days (periods)
- (viii) Complete finishing of borrow pits for approval by DMR

B1205 WORKMANSHIP AND QUALITY CONTROL

Add the following:

Quality control (Scheme 1) as detailed in Section 8200 will be used for determining the acceptance levels with respect to the properties of the materials and workmanship executed by the contractor.

Delete the second, third, fourth and fifth paragraphs and replace with the following:

"The contractor shall submit the quality assurance plan and system he proposes using to the engineer for his approval within two weeks of site handover. Once accepted it shall not be deviated from unless written notification of proposed changes have similarly been submitted and approved. The system shall record lines and levels of responsibility and indicate the method by which testing procedures will be conducted."

Add the following to the end of this clause:

"The engineer shall for the purpose of acceptance control on products and workmanship, assess test results and measurements in accordance with the provisions of section 8200 of the standard specifications. Where small quantities of work are involved, a lot shall mean a full day's production for a specific item of work subject to acceptance control testing.

B1206 THE SETTING-OUT OF WORK AND PROTECTION OF BEACONS

Delete the entire contents of the first paragraph and the following words in the first sentence of the sixth paragraph.

"and of clause 5.3 of the general conditions of contract."

Add the following at the end of the fourth paragraph:

The repair method of this route is to reconstruct the road to existing levels with some localised section to be indicated by the Engineer to be constructed to redesigned lines and levels.

B1207 NOTICES, SIGNS AND ADVERTISEMENTS

One signboard shall be erected and maintained for the duration of the contract at points to be

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indicated by the engineer. Details of the signboards are included in the contract drawings.

Delete the last paragraph and replace with the following:

“All signboards erected in accordance with the drawings or as ordered by the Safety Officer / Engineer shall be removed at the same time as the de-establishment of the contractor’s camp. Payment under item 13.01 for the final instalment of 15% of the tendered lump sum shall not be made unless all the advertisements, notices and temporary signs have been removed.”

B1209 PAYMENT

(b) Rates to be inclusive

Add the following to the first paragraph:

“VAT shall be excluded from the rates.”

Amend sub clause (e) Materials on site by deleting and replacing the words:

“Clause 52 of the general conditions of contract” in the first sentence of the first paragraph with Clause 6.10.2 of the General Conditions of Contract for construction works third edition (2015).

B1210 CERTIFICATE OF PRACTICAL COMPLETION OF THE WORKS

Delete and replace the words in the first paragraph:

“Clause 54 of the general conditions of contract” in the fourth line of the first sentence with Clause 5.14 of the General Conditions of Contract for construction works third edition (2015).

Add the following to subclause (e) before the semicolon:

“(Including road studs)”

Add the following paragraphs under new item (h):

“Notwithstanding that there might be natural or programmed sections or portions of the works that will result in them being completed in their entirety before other sections of the works, no consideration shall be given to the issuing of practical completion certificates for sections of the works. The use of any completed roadway or sections of the work, whether for unhindered use by the public or for accommodation of traffic while other sections are being constructed, shall not constitute use or occupation by the employer.

In addition to the listed specified items of work and regardless of the degree of beneficial occupation by the employer, the works shall be considered for practical completion only if the following criteria have also been met:

- (i) The estimated cost to complete the outstanding work is less than 2% of the tendered sum for the work plus the cost of any variation or extra work orders, but excluding CPA and VAT.
- (ii) The written list of outstanding items of work can be completed within 30 calendar days of the list having been accepted in writing by the contractor.
- (iii) Any information in the contractor’s possession, which is required by the engineer and has been requested in writing, has been supplied.
- (iv) The Regional Manager of the Department of Mineral Resources (DMR) has issued written confirmation to the contractor that they are satisfied with the final shaping to all quarries, borrow pits, stockpile areas, and spoil sites used or intended to be used under this contract. In the

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event of this written confirmation is not obtained from DMR within 60 days, the acceptance by the Independent Environmental Practitioner (IEP) will be sufficient for the issuing of the Certificate of Completion. The confirmation from DMR will be a condition of the issue of the Certificate of Completion."

B1211 TRAFFIC OVER COMPLETED LAYERS

Add the following after the first paragraph:

"No construction traffic shall be allowed on completed recycled subbases or base prior to the final surface overlay being completed. In the event that access to properties result in traffic having to be accommodated over stabilised layers, the contractor shall make allowance for a protection layer of at least 50mm sand layer on top of the stabilised layer."

B1212 ALTERNATIVE DESIGNS AND OFFERS

Add the following to the end of sub clause (m):

"The provision for contract price adjustment in the original tender summary must not under any circumstances be altered in an alternative tender"

B1214 CONTRACTOR'S ACTIVITIES IN RESPECT OF PROPERTY OUTSIDE THE ROAD RESERVE AND OF SERVICES MOVED, DAMAGED OR ALTERED

Add the following to the last paragraph of sub clause (d)

"These written statements shall be handed to the engineer before the final certificate will be issued. Failing to obtain these written statements from all landowners and authorities concerned, the period of maintenance will be extended including all conditions related to such an extension, until such time that all these statements are obtained.

The obtaining of any such written statements will not relieve the contractor of the execution of any of his obligations to the satisfaction of the landowner or authority concerned, and to the approval of the engineer."

B1215 EXTENSION OF TIME RESULTING FROM ABNORMAL RAINFALL

Delete and replace the words in the first paragraph:

"Clause 45 of the general conditions of contract" in the first line of the first sentence with Clause 5.12 of the General Conditions of Contract for Construction Works Third edition (2015).

Add the following after the first paragraph:

Method (ii) (Critical-path method) shall be used on this contract.

Method (ii) (Critical-path method)

Delete and replace the words in the second paragraph with the following:

Replace the word "five-day" in the second paragraph with "six-day".

The value of "n" is twenty (20) days.

Refer to historical data included in **PART C4** of this document.

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B1217 PROTECTION OF THE WORKS AND REQUIREMENTS TO BE MET BEFORE CONSTRUCTION OF NEW WORK ON TOP OF COMPLETED IS COMMENCED

Delete and replace the words in the first paragraph:

“Clause 35 of the general conditions of contract” in the second line of the first sentence with Clause 8 of the General Conditions of Contract for construction works third edition (2015).”

B1219 WATER

Add the following:

“Water for use on site other than municipal, shall be subject to required permits from DWA submitted to the Contract Engineer by the Contractor. This shall include such extraction points as rivers, privately owned dams, streams, and boreholes. Farmers along the existing rivers could be operating under a quota system of DWA and the contractor shall make his own arrangements for obtaining water from landowners who are not utilizing their quotas to the full or who are willing to provide water. All related arrangements and cost shall be included in the tender rates as applicable.”

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Use Table B1219 below to determine the suitability of water for construction purposes.

Property	Unit	Water Quality Classification Code						Method
		H0	H1	H2	H3	H4	H5	
		Pure water (AR)	Clean water (Rain)	Treated water (Municipal)	Silty (muddy) water with low salt content	Highly mineralised chloride sulphate water (brackish)	Waste brack, sewage, marsh, sea, etc. water	
PH*	-	7.0	5.7 – 7.9	4.5 – 6.5	4.5 – 8.5	9.0	-	SABS M113 SM 11 - 1990
Dissolved solids*	ppm	0	1000	1500	3000	-	-	SABS 213 SM213 - 1990
Total hardness*	-	None	None	Temporary	Temporary	Permanent	-	SABS 215 SM 215 – 1971
Suspended matter	ppm	0	2000	2000	5000	-	-	SABS 1049 SM 1049 – 1990
Electrical conductivity	mS/m	0	200	200	500	-	-	SABS 1057 SM 1057 – 1982
Sulphates (SO4)	ppm	0	200	300	500	1000	-	SABS 212 SM 212 – 1971
Chlorides (Cl)	ppm	0	500	1000	3000	5000	-	SABS 202 SM 202 – 1983
Alkali Carbonates (CO3) & Bicarbonates (HCO3)	ppm	0	500	1000	1000	2000	-	SABS 241 – 1999
Sugar	-	Negative	Negative	Negative	Negative	Negative	-	SABS 833
Quality of water required	Untreated layer works	✓	✓	✓	✓	✓	Investigate the effect on the quality of the material	
	Chemically treated layer works	✓	✓	✓	✓	Investigate the effect on the quality of the material		
	Concrete mass	✓	✓	✓	✓	Investigate the effect on the quality of the material		
	Concrete prestressed	✓	✓					
	Slurry & emulsion	✓	✓					
	Soil/gravel tests	✓	✓					
	Chemical or control tests	✓	✓					
References: 1. Concrete Technology – Dr S Fulton (1989) 2. Materials Manual (PAWC)								

- A primary property. The quality of the water is that quality where all three of the primary properties are within the limits.
- The tabulated single values are maximum value except in the case of the pH value for pure water, which must be 7.0

B1222 USE OF EXPLOSIVES

Add the following subclauses:

“(h) Definitions

- (i) **“Specified excavation or Payment line”** means the excavation profile given on the Drawings or determined by the engineer for the Works, within which no unexcavated or loose material shall occur after the excavation is complete except as allowed within the specified tolerances. It is also the line to which payment for excavation will be made.
- (ii) **“Pre-splitting”** comprises drilling a line of closely spaced parallel holes of appropriate diameter, spaced not more than ten times the hole diameter or 600mm, whichever is the smaller and charging the holes with an appropriate amount (decoupled if necessary) and type of explosive to shear the rock, forming a surface along the line of drill holes.

Either all the holes in a presplit line shall be drilled, charged and detonated simultaneously prior to drilling the production holes for the excavation adjacent to the presplit line, or pre-splitting shall be accomplished by delaying detonation in the production holes to allow the presplit holes to fire first. The first line of production holes next to the presplit face shall be lightly charged to ensure that the presplit face is not damaged when the charges in the production holes are detonated.

- (iii) **“Smooth blasting”** comprises the drilling of a number of closely spaced parallel holes along the required excavation surface, with a suitable burden/spacing ratio, loading all the holes lightly with a uniform continuous charge of small diameter explosive and detonating all these charges simultaneously, after the detonation of the main production blast.
- (iv) **“Line Drilling”** comprises drilling a line of holes of appropriate diameter spaced not more than twice the hole diameter to form a surface of weakness along which the rock will break. Blasting is not permitted in the line drilled holes, and the first line of production holes next to the line drilled holes shall be lightly charged to avoid damage to the line drilled break surface.
- (v) **“Cushion Blasting”** comprises the separate removal of a protective zone of rock which has been purposely left within the specified limits of excavation for flat areas and shallow slopes. Drilling for cushion blasting shall consist of a regular pattern of holes at appropriate spacings and angles and to accurate depths. The holes shall be lightly charged and detonated in relays to lift the rock progressively to form the final excavated surface without shattering the surrounding rock.
- (vi) **“Overbreak”** means any excavation area which extends beyond the payment line, irrespective of the reason for such excavation.

(i) General

The design of blasts shall be undertaken by a suitably qualified person. A copy of all certificates issued to workmen to permit them to undertake blasting, and to the contractor to cover the purchasing, storage and transport of explosives shall be handed to the engineer before any blasting work is undertaken.

The contractor shall submit to the Engineer at least 28 days before the commencement of any excavation work or drilling, full details of his proposed methods and sequence of excavation and programme for the use of explosives.

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Within 2 weeks of receipt of the proposals, the engineer shall indicate acceptance in part or in whole, in writing, to the contractor. The engineer reserves the right to reject the proposals if, in his opinion, undesirable damage to permanent rock surfaces or existing structures will result from carrying out the blasting as proposed. If acceptance is withheld, new proposals in whole or in part shall be submitted.

No drilling or blasting shall be carried out in areas for which the proposals have not been accepted by the engineer, and any changes to the accepted methods shall be subject to the engineer's approval.

The work shall be programmed so as to minimise blasting adjacent to previously constructed sections of the Works.

Where blasting is necessary every precaution including the use of blast mats, timber boarding or other means shall be exercised to protect the Works and persons, animals and property in the vicinity of the Site. The contractor shall accept responsibility for all injury or damage occasioned by any blasting operations and shall make good such damage without any additional payment.

The contractor shall, in particular, note the requirement that he must limit to the maximum extent practicable the spillage of material from surface excavations, whether by blasting or other means. To this end the contractor shall take all necessary precautions including, if necessary, covering the rock prior to blasting with sufficient loose material to prevent the blasted material being thrown. If, however, during the course of excavation on a hillside, the engineer is of the opinion that insufficient precautions are being taken to minimise the spillage of material, he may instruct the contractor to adopt further measures to reduce the spillage. No separate payment will be made for any such measures required.

Each separate blast shall be designed in accordance with modern blasting practice to break out the rock with the minimum explosive force. Full details of each blast, unless such blast is unchanged from the previous one, shall be submitted to the engineer for scrutiny not later than 24 hours prior to the commencement of drilling for that blast. The details shall include the location, depth and area of blast holes, the type, strength, amount, column load and distribution of explosives to be used per hole, per delay and per blast, the sequence and pattern of delays, the maximum expected level of shockwaves on adjacent structures, and the description and purpose of any special methods to be adopted by the contractor.

The consent by the engineer to any blasting proposals shall not relieve the contractor of his responsibilities under the Contract and the law.

Should the contractor excavate to dimensions in excess of those specified or instructed by the engineer, whether to remove damaged material or for reasons of safety or for his own convenience, he shall at his own expense and when required by the engineer, fill in the excess excavation with concrete or sprayed concrete of approved quality or with other material approved by the engineer, or carry out additional trimming to the satisfaction of the engineer.

The contractor shall provide the engineer each day with a copy of the record for the previous day's excavations. Where applicable the following data shall be recorded for each working area together with such other data as the engineer may request.

- (i) location of the excavation and position within the excavation
- (ii) drilling pattern
- (iii) type and amount of explosive used, including blasting pattern and delays used
- (iv) details of rock support
- (v) surface area of sprayed concrete and location
- (vi) number and classification of labour and plant
- (vii) unusual occurrences, rockfalls, unstable or soft ground and inflows of water
- (viii) progress, delays and reasons for delays
- (ix) name and permit number of blaster
- (x) date
- (xi) distance of blasts to structures and existing services

(j) Quality of Excavated Surface

Unless otherwise instructed by the engineer all blasting work shall be carried out using controlled blasting techniques to minimise any damage to the final profile.

Use shall be made of approved special explosives and/or blasting techniques which will minimise blasting induced fractures, or disturbance, on the rock faces outside the excavation line so preserving the rock in the soundest possible condition. No separate payment will be made for cushion blasting. The cost of using cushion blasting techniques shall be included in the rates for excavation.

The surface after blasting shall exhibit a regular fracture plane between barrels without back break and with half barrels visible over the major portion of the surface. The surface shall be scaled down of all loose and hollow sounding rock to leave a solid, intact surface. Light charges shall be used for enlarging or correcting the excavated profile and also for excavating trenches.

If in the opinion of the engineer, the methods of blasting are at any time causing excessive or undesirable disturbance of the rock mass surrounding the excavated space, he may order the contractor to change his methods of blasting and/or carry out blasting trials until the desired results are achieved. No additional payment shall be made for any change or further trials ordered by the engineer or any delays resulting there from.

The spacing of holes and explosive charges shall be adjusted so that a minimum of oversize material is produced (a maximum particle size of 600mm). The engineer shall have the right to order the contractor to adjust his blasting pattern and/or carry out secondary blasting at his own cost, should he be of the opinion that the contractor is not taking sufficient care to produce rock of the required size.

(k) Monitoring of Blasts

The contractor shall supply and operate an approved tri-axial particle velocity meter equipped with a permanent paper trace output, which shall be used as and where directed by the engineer to monitor blasting work.

The paper trace output records shall show the time and location of each blast, the type and amount of explosive used, together with any other relevant data. Copies of these records shall accompany the daily records required in terms of Clause (i) above.

The contractor shall 7 days prior to submission of blast designs, complete a single hole detonation for each blast site. This blast is to be accurately monitored by the contractor in order to obtain the rock factor (k), which will be used in Langefors' formula to estimate the peak particle velocities.

(l) Notification of Blasts

Prior to any blasting, 28 days' notice is to be given to the engineer and relevant authorities. The contractor shall further notify the engineer of the intention to blast at least 48 hours before that operation is carried out. The notification shall show the location of and the intended time of each blast and the name of the licensed blaster and shift foreman responsible. No blasting shall be undertaken during any known peak hour days on specific peak hours (long weekends).

The contractor shall distribute written notification to all organisations on site, and relevant authorities, 24 hours prior to undertaking blasting. Any delay or postponement of any blasts shall be notified to all organisations immediately. The firing of explosives shall be restricted as detailed in Item B1222(r) of this specification.

(m) Blasting near Structures

The amount of explosives that may be detonated shall not result in a ground vibration with a peak particle velocity in excess of 25mm/sec at the nearest point of any part of Permanent Works. Where circumstances dictate, such as when blasting near to partially cured concrete, the peak particle velocity permitted may be reduced by the engineer.

Blasting shall not be carried out within 10m of any Works, unless otherwise agreed to in writing by the

engineer.

(n) Controlled Blasting

Controlled blasting methods shall comprise pre-splitting, smooth blasting, line drilling or cushion blasting techniques.

All charges shall be accurately made up and inserted into the holes at the correct spacing, and all holes shall be correctly stemmed and connected in the correct sequence, with detonators being correctly delayed.

If at any time the methods of drilling and blasting do not produce the desired results of a uniform profile and shear face without overbreak, all within the tolerances specified, the contractor shall be required to undertake tests as until a technique is arrived at that will produce the desired results.

Controlled blasting shall be used in the widening of the cuttings or otherwise where called for by the engineer.

(o) Drilling

In all controlled blasting, drilling accuracy of perimeter holes is of prime importance and the contractor shall take particular care and make use of sight lines and guide rails in surface work to control the alignment and depth of blast holes. Holes which are likely to protrude more than 100mm beyond the excavation profile, shall not be charged up, but shall be redrilled.

The blast pattern shall be accurately set out and holes shall be collared within 50mm of the required position. Holes which are overdrilled shall be fully stemmed to the required depth before charging up takes place.

The length of perimeter holes for any individual lift shall not exceed 10m or any lesser depth detailed on the drawings. All perimeter holes for surface blasting shall be drilled to a depth of 1m below the bottom of any production holes adjacent to the perimeter plane.

(p) Use of Explosives

Both cartridge and bulk explosives may be used where appropriate.

In controlled blasting the type, size, decoupling and charge concentration of perimeter and bulk charges shall be within established parameters unless otherwise proven acceptable by site trials.

The bottom charge of a pre-split hole shall not be larger than the line charges unless otherwise directed. The top charge of the pre-splitting hole shall be placed far enough below the collar to avoid overbreaking the final profile.

Adequate stemming shall be used to avoid blow-outs.

(q) Checking and Correcting the Excavated Profile

The excavated profile shall be checked for line, level and underbreak using methods approved by the engineer. No projections of rock shall protrude within the payment line, except as allowed within the specified tolerances.

The contractor shall submit his proposals for removing any underbreak to the engineer for his consent prior to carrying out any such work of removal. Any work executed or delays, which are due to the contractor having to re-excavate underbreak and then re-install support shall be carried out without additional payment, and no extension of time will be allowed for this work.

(r) Accommodation and Protection of Existing Services and Infrastructure

In the event of the laid-down vibration parameters as detailed in (m) above being exceeded or in the

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event of a valid recording not being made available as stipulated above, the engineer reserves the right to ascertain by whatever means, whether damage was caused by the blast to the service or structure. All costs incurred in establishing such possible resultant damage and the repair thereof will be to the contractor's account.

(s) Specific blasting

If considered necessary by the Engineer to order a specific type of blasting method it shall be indicated in the documents and/or pricing schedule. The ordering of a specific type of blasting method by the Engineer shall not relieve the Contractor from his obligations relating to the accuracy of the excavated profile.

(t) Blasting near Roads

Blasting near existing roads shall be undertaken during off peak traffic hours. Reference shall be made to sub-clause B1502(m) of these specifications."

B1224 THE HANDING-OVER OF THE ROAD RESERVE

Add the following:

"The full extent of the road reserve will be handed over to the Contractor at the beginning of the contract. The total area taken up by the road reserve and borrow pits as well as quarries are applicable. He shall be responsible for the maintenance along this portion of the road until completion of the contract."

B1227 MONTHLY SITE MEETINGS

Add the following to this clause:

"The contractor's representative attending site meetings shall have the authority to take decisions and make commitments on behalf of the contractor. The contractor shall prepare and submit progress and information reports as required by the engineer five days before the meeting date agreed. These report sheets shall be discussed and reviewed at the monthly meeting or at any other meeting if deemed necessary by the engineer."

B1229 SABS CEMENT SPECIFICATIONS

The standard cement specifications SABS 471, SABS 626, SABS 831 and SABS 1466 have been withdrawn and are replaced by the new SANS 50197-1 and -2: Common cements, and SANS 50413-1 and -2: Masonry cement. These specifications will be applicable to this contract, and the descriptions and types of cements specified, will be based on the designations as defined in these specifications.

Add the following clauses:

"B1230 MATERIALS

(a) General

The contractor, when using materials that are required to comply with any standard specification, shall, if so ordered, furnish the engineer with certificates showing that the materials do so comply.

Where so specified, materials shall bear the official mark of the appropriate authority. Samples ordered or specified shall be delivered to the Contract Engineer's office on the site, free of charge.

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Where proprietary products have been specified, similar products may be used subject to the prior written approval of the engineer (as allowed for in an alternative tender).

Unless otherwise specified, all proprietary materials shall be used and placed in strict accordance with the relevant manufacturer's current published instructions.

Unless anything to the contrary is specified, all manufactured articles or materials supplied by the contractor for the permanent works shall be unused or new materials.

Earth, stone, gravel, sand, and all other materials excavated or present on the site or within the road reserve, or in borrow areas shall not become the property of the contractor, but will be at his disposal only in so far as they are approved for use on the contract.

Existing structures on the site shall remain the property of the employer and except as and to the extent required elsewhere in the contract, shall not be interfered with by the contractor in any way (except for structures to be fully or partially broken down).

Materials to be included in the works shall not be damaged in any way and, should they be damaged on delivery or by the contractor during handling, transportation, storage, installation or testing they shall be replaced by the contractor at his own expense.

All places where materials are being manufactured or obtained for use in the works, and all the processes in their entirety connected therewith shall be open to inspection by the engineer (or other persons authorised by the engineer) at all reasonable times, and the engineer shall be at liberty to suspend any portion of work which is not being executed in conformity with these specifications.

The contractor shall satisfy himself that any quarry or commercial source selected and identified for use provides the specified quality material in accordance with the specification.

All road signs used for accommodation of traffic shall be serviceable in terms of reflectivity, unbroken in any manner and to the correct sizes as specified. Signs not fit for purpose or damaged during use shall be replaced and removed from the site at the contractor's cost.

(b) Compaction

All references to "% of modified AASHTO density" made in the standard specifications and project documents shall be read as "% of MDD".

B1231 ENVIRONMENTAL IMPACT CONTROL

Respect for the environment is an important aspect of this contract. The environmental control of the site shall comply to the following list of activities.

- (a) The Contractor must allow for the satisfactory combating of dust and noise nuisance throughout the contract length during construction.
- (b) The Contractor must make provision for the prevention of excessive erosion and siltation throughout the Contract and in particular on adjacent land. Should excessive erosion and/or siltation take place outside the road reserve as a direct result of the Contractor's construction activities it will be the Contractor's responsibility to make good the erosion/siltation to the satisfaction of the landowner and the Engineer.
- (c) No littering by construction workers shall be allowed. A refuse control system shall be

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established for the collection and removal of refuse to the satisfaction of the engineer.

- (d) Adequate provision shall be made for temporary toilet requirements in construction areas. Use of the veld for this purpose shall not, under any circumstances be allowed.
- (e) Streams, rivers and dams shall be protected from direct or indirect spillage of pollutants, such as refuse, garbage, cement, concrete, sewage, chemicals, fuels, oils, aggregate tailings, wash water, organic materials and bituminous products. In the event of spillage, prompt action shall be taken to clear the affected area.

Emergency measures in the event of spillage must be set out and the responsible person made aware of the required action. The construction of temporary and or permanent dams must be done with the necessary approvals from the Department of Water Affairs and Forestry and Environmental Affairs and Tourism.

- (f) Bituminous and/or other hazardous products shall not be spoiled on site and may only be disposed of in licensed authorised disposal facilities.
- (g) Control of invader species of plants.
- (h) Clearing shall be limited to the road prism and, where applicable, detours, which shall be sited in consultation with the Engineer and the local communities.

No separate payment will be made for observing these requirements as it is deemed to be included in the amount tendered for Item 13.01(c) but any avoidable non-compliance with these rules may be considered sufficient grounds for withholding payment of part or all of the amounts to be paid for the above item.

B1232 WORKMEN'S COMPENSATION ACT

All labour employed on the site shall be covered by the Workmen's Compensation Act. The Contractor shall pay in full, including the payment of the necessary levies, such amounts as are due in terms of the Act.

The manner in which Workmen's Compensation shall be handled shall be resolved by the Contractor at the commencement of the contract.

B1233 CARE OF WORKS, DAMAGE, INJURY AND INSURANCE

Compliance with Road Traffic Act:

When a service necessitates vehicles or plant travelling or working on a public road the following shall apply:

- The vehicles and plant shall be licensed in terms of the National Road Traffic Act 1996 (Act No. 93 of 1996) as amended.
- Every driver and operator of a vehicle or an item of plant shall be in possession of a valid permit in respect of the class of vehicle or item of plant he is driving or operating.

The contractor shall provide, erect and maintain sufficient road signs, barricades, fencing and guarding as may be necessary or required by the Engineer or by any act, regulation or statutory authority in order to minimise the danger and inconvenience caused to vehicle and pedestrian traffic.

The Contractor by accepting this contract shall be deemed to have indemnified the Employer and the Engineer against any claims, damages and / or costs that may arise in this regard.

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B1231 MEASUREMENT AND PAYMENT

Item	Unit
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B12.01 Relocation, protection or replacement of existing services:

- (a) Allow a provisional sum for existing services to be relocated, protected or replaced as ordered by the engineer:
 (specify service) provisional sum (prov sum)
- (b) Handling cost and profit in respect of:
 (specify sub-subitem)percentage (%)

The provisional sum item shall be paid in accordance with the provisions of the General Conditions of contract as amended if applicable. The tendered percentage is a percentage of the amount actually spent under the items agreed and shall include full compensation including profit etc. for providing equipment, if required, labour transport, supervision, accommodation of traffic and incidentals.”

Item	Unit
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B12.02 Excavation:

Excavating material within the following depth ranges below ground level for the exposing of/or searching for services

- (a) 0m to 2m:
 - (i) Soft materialcubic metre (m³)
 - (ii) Hard materialcubic metre (m³)
- (b) Extra over item B12.02(a) for excavation by means of hand tools such as picks, crowbars and pneumatic tools or mechanical breakers in close vicinity of services where no blasting or machine excavation is permitted:
 - (i) Soft materialcubic metre (m³)
 - (ii) Hard materialcubic metre (m³)

Measurement and payment shall be as specified for item 22.01 in the standard specifications.

Item	Unit
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B12.03 Excavation of test pits and sampling thereof along the Road as instructed by the engineer

- (a) Sampling by approved materials laboratory prime cost sum (PC sum)
- (b) Handling cost and profit in respect of
 (specify sub-subitem)percentage (%)

The PC sum items shall be paid in accordance with the provisions of the General Conditions of Contract as amended by Particular Conditions of Contract. The tendered percentage is a percentage of the amount actually spent under the prime cost sum and provisional sum items, which shall include full inclusive compensation including profit to the contractor in connection with providing the specified service.

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Item	Unit
B12.04 Community Liaison Officer (CLO)	
(a) Remuneration of Community Liaison Officer	provisional sum
(b) Handling costs and profit in respect of sub-item B12.04 (a)."	percentage (%)

The CLO shall be paid at a rate as determined by the Employer.

The following General Requirements and Provisions refer to section C3.3 of this document.

Refer to **PART C3.3: PARTICULAR SPECIFICATIONS**

PART C: ENVIRONMENTAL MANAGEMENT

Add the following payment items:

Item	Unit
C10.01 Environmental Control Officer	
(a) Provisional Sum for remuneration of Employer's agent for Environmental Control Management (ECM)	Provisional sum
(b) Contractor 's handling cost, profit and all other charges in respects of sub item C10.01 (a).....	Percentage (%)

Item	Unit
C10.02 Negotiation with land owners and authorities	
(a) Compensation to the affected land owners.....	Provisional sum
(b) Handling Cost and profit in respect of Sub-item C10.02 (a).....	percentage (%)

PART E: OCCUPATIONAL HEALTH AND SAFETY ACT OBLIGATIONS

Add the following payment items:

Item	Unit
E10.01 Occupational Health and Safety	
(a) Contractor's initial obligations in respect of the OHS Act and construction regulations.....	Lump Sum
(b) Contractor's time obligations in respect of the OHS Act and construction regulations.....	Month
(c) Submission of the Health and Safety file	Lump Sum
(d) Provision for personal protection equipment and clothing	Lump Sum
(e) OHS Training.....	Lump Sum

Item	Unit
E10.02 Occupational Healty & Safety Agent on behalf of the Employer	
(a) Provisional Sum for payment of OHS Agent	Provisional sum
(b) Handling Cost and profit in respect of Sub-item F10.02(a)	percentage (%)

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PART F: TRAINING

Item	Unit
F10.01 Training	
(a) CETA Accredited training	
(i) Generic skills	provisional sum
(ii) Entrepreneurial skills	provisional sum
(iii) Experiential training for S4 civil students.	provisional sum
(b) Handling costs and profit in respect of sub-item F10.01(a)(i) to (iii).	percentage (%)
(c) Training venue	Lump sum
(d) Transport and accommodation of workers for training where it is not possible to undertake the training in close proximity to the Site	provisional sum
(e) Handling costs and profit in respect of sub-item F10.01(d).	percentage (%)

Payment of the training allowance in sub-item F10.01(a) will be made at the daily task rate set for the SPWP. Expenditure under sub-items F10.01(b), (c) and (d) shall be made in accordance with the General Conditions of Contract, the tendered percentages being a percentage of the amounts actually spent respectively under sub-items F10.01(a) and (c)."

SECTION 1300: CONTRACTOR'S SITE ESTABLISHMENT ON SITE AND GENERAL OBLIGATIONS

B1302: General Requirements

(c) Legal and contractual requirements and responsibility to the public

Add the following:

"All costs incurred to comply with the requirements of the Occupational Health and Safety act of 1993 including Construction Regulations of 2014 as well as additional requirements as specified in the Chief Alert Luthuli Local Municipality Health and Safety and Environmental Management documents, shall be included in the contractor's general obligations tendered by the contractor.

When the activities of the contractor cause damage to vehicles of the travelling public, directly or indirectly, such as damage caused by loose aggregates on the road surface, and the contractor or his insurance company does not satisfactorily settle claims emanating from such occurrences, the employer reserves the right to settle such claims on behalf of the contractor and deduct such costs from the monthly payment certificates. Such payments are provided for in Section 1300 of the pricing schedule."

Add the following new sub-clause:

(e) Contractors ablution facilities

The Contractor shall, at each construction section, provide sufficient portable chemical latrine units. Furthermore, the contractor shall also provide a portable chemical latrine unit at each temporary traffic control facility complying with the EMP. The latrine units shall be serviced daily and kept in a hygienic and orderly state to the approval of the engineer. No separate payment shall be made for this requirement and the costs thereof shall be deemed to be included in the rates tendered for the items B13.01(c)."

"(f) Appointments

The Contractor shall as a minimum appoint the following staff members:

- Traffic Safety Officer
- Site environmental Officer
- Health and Safety Officer in terms of the Occupational Health and Safety Act.

The contractor shall submit a CV of the candidates with previous similar experience to the engineer for approval before the candidate is appointed."

B1303: PAYMENT

Item	Unit
B13.01	The contractor's general obligations

Add the following paragraph after the fourth paragraph, i.e. after the paragraph numbered as (iii):

"(iv) Should the combined total tendered for sub items (a), (b) and (c) exceed 15% of the tender sum (excluding VAT), the tenderer shall state his reasons in writing for tendering in this manner."

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Item	Unit
B13.02 Supply, transport to site and erect contract signboards	Number (No.)

The item shall cover all costs with regard to producing and erecting the signboards in accordance with the drawing and removal thereof at the end of the contract.

SECTION 1400: HOUSING, OFFICES AND LABORATORIES FOR THE ENGINEER'S SITE PERSONNEL

B1402 OFFICES AND LABORATORIES

b) Offices

Amend sub-clause (xii) to read as follows:

“(xii) A complete telephone service capable of delivering electronic and facsimile data, together with ...”

Amend sub-clause (xvii) to read as follows:

“(xvii) A combination colour printer/copier/scanner/facsimile machine for A3 and A4 size documents.”

Add the following sub-clauses:

“(xviii) Plan holders which shall be able to accommodate 30x A0 – sized drawings hanging vertically and of a robust construction to withstand continuous use over the duration of the contract.

(xix) An electric refrigerator of specified capacity.

(xx) Floodlights which are to be controlled by a photocell for security purposes at the offices and laboratory.

c) Laboratories

In the second paragraph, second line substitute “drawings” with “figures included in the project document”

B1404 SERVICES

d) Water electricity and gas

Add the following to the end of the third paragraph:

“The power supply shall be regulated by a suitable voltage regulator in order to maintain a constant current and voltage level at all times to prevent damage to the office and laboratory equipment and related machinery during power surges. In the event of damage to the office and laboratory equipment and related machinery because of a faulty voltage regulator, the contractor shall be liable for payment of all repair or replacement costs of such damaged items.”

Add the following paragraph:

“The supply of electricity and water to the offices and laboratories of the engineer’s supervisory staff shall be maintained 24 hours per day”

B1405 GENERAL

Add the following to paragraph (e):

“In addition, the offices and laboratories shall be supplied with approved burglar proofing and the whole site shall be guarded full time during the day and night, as well as over weekends and holidays. The site shall also be fenced with a 2,4m high security fence with a razor-cut wire being used as strands or with a brick wall. The cost of this protection shall be included in item B13.01.”

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B1406 MEASUREMENT AND PAYMENT

Item			Unit
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B14.03 Office and laboratory fittings, installations and equipment

a) Items measured by number

Add the following subitems:

- “(xx) Electric Refrigerator 120litre number (No)
- “(xxi) Floodlights complete with poles and 500Watt minimum globes number (No)

The tendered rate for subitem B14.03(a)(xxi) shall include for the operation of the lights from sunset to sunrise for the full duration of the contract.”

b) Prime cost items and items measured and paid for in a lump sum

Add the following subitems:

- “(ix) Cell phones costs, including pro-rata rentals, for calls in connection with contract administration Prime Cost sum
- (x) Handling costs and profit in respect of subitem 14.03(b)(ix) above..... percentage (%)
- (xi) Laptop to the Engineer.....Prov sum
- (xii) Handling costs and profit in respect of subitem 14.03(b)(xi) above..... percentage (%)
- (xiii) Internet connection (ADSL or mobile LTE) for e-mail connectivity.....Prime Cost sum
- (xiv) Handling costs and profit in respect of subitem 14.03(b)(xiv) above..... percentage (%)

Payment of B14.03(b)(ix) & (xiii) shall include for the cost of all cellular telephone calls and data respectively in connection with contract administration, as well as pro rata fixed costs.

Payment of B14.03(b)(xi) shall include the cost of a laptop as specified by the Engineer including software.

The tendered percentage for pay item B14.03(b)(x), (xii) & (xiv) shall be a percentage of the amount actually spent under sub items which shall include full compensation for the profit and handling costs incurred in managing provision of the cellular phones and monthly billings.”

Item			Unit
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B14.10 Provision of Photostat facilities

Amend this pay item description to read “Provision of copying facilities” and in the payment prescription, amend “photocopier” to read “combination colour printer/copier/scanner/facsimile machine”.

SECTION 1500: ACCOMMODATION OF TRAFFIC

B1501 SCOPE

Add the following:

"It is a condition of this contract that traffic is accommodated taking into account the provisions of the latest edition of the South African Road Traffic Signs Manual (SARTSM). The latest version for use in the accommodation of traffic is volume 2, chapter 13 of the June 1999 edition. Copies of this publication are available from Government Printers

Tel: (012) 334 4507/8/9 or (012) 334 4510 Fax: (012) 323 9574.

Although drawings are included in the contract, these drawings are taken to be indicative only and shall not in any way relieve the contractor from his obligations in terms of the contract related to safe passage of traffic and regulations in Chapter 13 of Traffic Signs manual as specified below:

Arrangements expected to be most commonly used are given in the drawings. The Contractor shall assess the drawings in terms of actual site conditions and traffic and amend the drawings as required for the safe passage of traffic. Any amendment or addition to the drawings shall be with the approval of the Contract Engineer.

This section also covers the provision of additional information signs for motorists and the release of any notices to the media and public."

B1502 GENERAL REQUIREMENTS

Insert the following:

"The whole of the site will be handed over to the contractor at the beginning of the contract. The sequence in which various parts of the site may be occupied by the contractor for the execution of the different items of work shall be subject to the requirements of the contract documents regarding, inter alia, working hours and the number, spacing and length of the work areas which may be occupied at any particular time.

The contractor shall programme his work taking due cognizance of restrictive conditions indicated in Clause B1204. The contractor's tendered rates shall include full compensation for all possible additional costs which may arise from the above and no claims for extra payment as a result of this modus operandi will be considered. The contractor shall in particular note that no additional compensation shall be made for work that could be considered as half-width construction."

(a) Safety

Add the following as an introductory sentence to this sub clause:

"Traffic shall be accommodated in accordance with the South African Road Traffic Signs Manual with the least delay and discomfort to the public."

(b) Providing Temporary Deviations

Add to Sub-clause 1502(b) the following:

The contractor shall keep the provincial traffic police, the municipal traffic departments and the engineer fully informed with regard to any changes in the normal traffic flow and obtain their approval for these changes.

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During the non-working hours, all unnecessary obstructions to the traffic shall be removed and all signs no longer applicable to the situation shall be removed or effectively covered.

(i) Traffic Safety Officer

Add the following to the end of the second paragraph:

“The contractor shall submit a CV of the candidate to the engineer for approval before the candidate is appointed as the traffic safety officer. “

Insert the following as the opening phrase to sub-sub-clause (i):

“make himself available to discuss road safety and traffic accommodation matters whenever required by the engineer and shall be responsible...”

Delete sub-sub-clauses (ii) and (iii) and replace with the following:

- “(ii) Record on neat and dimensioned sketches and submits to the engineer the position and sign reference number, where applicable, of each sign, barricade, delineator, cone, amber flicker light, guardrail and permanent or temporary painted road marking feature. The position of each shall be adequately referenced from the marker boards or other surveyed points on the site of the works.

These records shall also show the date and time at which the recorded traffic accommodation features are certified correct by the traffic safety officer, and shall be signed by the traffic safety officer before being submitted to the engineer.

The records shall similarly account for whatever changes are made in the field. Such changes shall record the position of flagmen and stop/go control men and their associated traffic accommodation equipment wherever they are used.

- (iii) Personally inspect the position and condition of each traffic accommodation feature on the whole site of works twice each day by 9h30 and by 16h30, to record all irregularities discovered and the remedial action taken, and to sign off as correct and submit to the engineer such record sheets by midday of the next working day. The traffic safety officer shall keep a duplicate book for this specific purpose.

The traffic safety officer shall also submit with this report the daily labour returns of flagmen, stop/go and traffic signal control men employed.”

Add the following sub-sub-clauses:

- “(ix) The traffic safety officer shall be equipped with a cellular telephone and shall have a vehicle and sufficient labour at his disposal 24 hours a day, including all prescribed non working days, and shall not be utilised for other duties. He shall be directly answerable to the contractor’s site agent. The traffic safety vehicle shall be a 1 ton LDV and shall be equipped with a high visibility rear panel in accordance with the requirements of the SARTSM. The words TRAFFIC CONTROL shall be written on a warning sign in highly legible letters, not less than 150 mm high, and the sign shall be mounted on the vehicle at least 1,5 m above ground level. The proposed sign and letter dimensions shall be submitted to the engineer for his approval.

The vehicle shall also be equipped with an amber-coloured flashing light of the rotating parabolic reflector type with a minimum intensity of 100 W. The warning light shall be switched on at all times and the sign shall be displayed when the vehicle is used on site.

The traffic safety officer shall have a direct line of communication at all times with the police and traffic officers responsible for the area within limits of the contract. The provision of the road safety vehicle, driver, labourers and the cost of the cellular telephone shall be deemed to be included in the rates tendered for the contractor’s establishment on site.

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- (xii) Ensure that all obstructions related to the contractor's activities be removed before nightfall where applicable as instructed by the engineer and that the roads are safe for night traffic.
- (xiii) The traffic safety officer shall, in addition to the duties listed in paragraph 1502 (i), also be responsible for the removal of broken down vehicles off the roadway and implementing actions requested by the traffic authorities with regard to the work to be carried out, be responsible for the erection and maintenance of all traffic signs necessary for the accommodation of traffic.
- (xiv) In the advent of an accident the traffic officer shall record in a written report the details of the accident, record the position of all temporary road signs, barricades, delineators, flagmen and any other devices used for traffic accommodation. In addition the report shall include a neat dimensional sketch, photographs, identifiable permanent features, and any other relevant information."

Add the following subclause:

“(j) Site Personnel

The contractor shall ensure that all his personnel, excluding those who are permanently office bound, are equipped with reflective safety jackets and yellow or orange overalls as well as safety head gear at structural sites and that these are worn at all times when working on or near to the travelled way. Any person found not wearing a reflective jacket or safety head gear under these circumstances shall be removed from the site until such time as he is in possession of and wearing a reflective jacket. Reflective safety jackets and head gear shall be kept in good condition and any that are, in the opinion of the engineer, ineffective shall be immediately replaced by the contractor."

(k) Failure to comply with provisions

Failure or refusal on the part of the contractor to take the necessary steps to ensure the safety and convenience of the travelling public, accommodation of traffic, plant and personnel in accordance with these specifications or as required by statutory authorities or ordered by the engineer, shall be sufficient cause for the engineer to apply penalties as follows:

A fixed penalty of R5 000,00 per occurrence shall be deducted for each and every occurrence of non-compliance with any of the requirements of section 1500 of the standard specifications and section B1500 of the project specifications.

In addition, a time-related penalty of R500,00 per hour over and above the fixed penalty shall be deducted for non-compliance to rectify any defects in the accommodation of traffic within the allowable time after the engineer has given an instruction to this effect. The engineer's instruction shall state the allowable time, which shall be the time in hours for reinstatement of the defects. Should the contractor fail to adhere to this instruction, the time-related penalty shall be applied from the time the instruction was given."

(l) Blasting

Blasting could be necessary. Blasting notification to the public shall be displayed visibly on signage approved by the Engineer. And displayed for 14 days prior to the blast date.

All traffic shall be stopped outside the blast area prior to the detonation of the blast. The Contractor shall ensure that it is not possible for any vehicle or pedestrians to enter this area at this time.

No blasting shall be undertaken without required suitable plant and labour available to clear / clean the road surface after blasting.

On completion of the blast and after the blaster has given the go-ahead, the Contractor shall inspect the road surface for debris and clear this away before opening the road again to traffic.

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(m) Public traffic

The contractor must plan and conduct his activities so as to bring about the least possible disruption to the traffic on the road. All halting of traffic will require the prior approval of the engineer and must be pre-arranged with the appropriate traffic authorities.

In all dealings with the public the Contractor shall bear in mind the public's right to enjoy the use of the road, and the Employer's desire to interfere as little as possible with this right. At all points of contact with the public, the Contractor shall deal with deliberate courtesy and understanding in any discussions or disputes.

(n) Access to work area

Construction traffic will only be permitted to enter or leave the work area at points approved by the Engineer and as clearly indicated on the traffic management plans. When any access point is in use, flagmen shall be provided for each such point. At least two flagmen shall be stationed at the access point to control the movement of construction traffic, and to warn public traffic on both lanes of the existing road. It is not the purpose of these flagmen to stop public traffic flow.

(o) Extension of time for completion

Accommodation of public traffic on the works or any delays caused thereby, as well as any suspensions due to failure by the Contractor to comply with the provisions for the accommodation of traffic, will not be regarded as special circumstances for an extension of time.

(p) Handing over site (additional sub clause):

The entire road reserve within the construction limits will be handed over to the contractor on commencement of the contract. The contractor will then be responsible for the accommodation of traffic on, and maintenance and repair work to be done on the existing roadways, from the date of handing over up to the issue of the Certificate of Completion.

The contractor's programme for the accommodation of traffic and any proposed deviation therefrom must be approved by the engineer on the site.

The Road Safety Officer to be appointed by the contractor shall be on full-time duty and shall be responsible for traffic control and safety on site, and for ensuring that all the requirements for accommodation are met.

B1503 TEMPORARY TRAFFIC-CONTROL FACILITIES

(e) Warning devices

Add the following:

"All construction vehicles and plant used on the works shall be equipped with amber flashing lights and warning boards as specified. All vehicles and plant, before being allowed onto the site, shall obtain a clearance permit from the engineer.

(i) Vehicle mounted flashing lights

Flashing lights shall have an amber lens of minimum height of 200 mm and shall be mounted in such a way as to be highly visible from all directions. The lights on construction vehicles shall not be switched on while vehicles are being operated on unrestricted sections of a public road, but shall be switched on while construction vehicles are operating within the accommodation of traffic area or public road, as the vehicles decelerate to enter a construction area, and as the vehicles accelerate to the general speed when entering the road from a construction area. Lights on plant shall operate continuously while the plant is working alongside sections of road open to public traffic.

All LDV's and cars operating on site shall also be equipped with amber flashing lights which shall be

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placed so as to be highly visible and operated continuously while the vehicles are manoeuvring in or out of traffic or are travelling or parked alongside roads open to public traffic. The lights and application thereof shall comply with the National Road Traffic Act No.93 of 1996/ Regulations/ GNR225 of 17 March 2000: National Road Traffic Regulations, 2000/176. Identification lamps.

Flashing lights and the "construction vehicle" signs on the contractor's vehicles and plant shall not be paid for separately but shall be included in the rates for traffic accommodation.

The contractor shall apply and maintain lights together with temporary mounting brackets, to the approval of the engineer. Vehicles and plant that do not comply with these requirements shall be removed from the site.

Add the following sub clauses:

“(g) Other traffic control measures ordered by the Engineer

The OHS Officer or Engineer may instruct the Contractor to provide any other road sign, reflective tape, etc. not measured in standard pay items and/or shown on the drawings or indicated in the mentioned Road Sign manual. A provisional sum is allowed for in the pricing schedule for this purpose (Item B15.17). Such road signs shall conform to the requirements of the SARTSM, or specification provided by the engineer. Similarly, in order to ensure that the travelling public is kept fully informed and warned on matters relating to the accommodation of traffic, construction sign posting and the effect of the construction on the free flow of traffic through the site, the Engineer may arrange for advertising in the press and/or for other forms of publicity.

(h) Flagmen

Flagmen shall be provided where shown on the drawings or required by the specification or circumstances requiring flagmen.

Flagmen shall be adequately trained in the standard flagging techniques as described in the SARTSM (refer to figure 13.23 of detail 13.23.1) and be provided with conspicuous clothing such as safety jackets utilizing retro-reflective and / or fluorescent panels in red, yellow and / or white.

Flags shall be made from bright red or red-orange material and shall be square with a minimum side length of 600 mm. The flag shall be attached to a staff at least 1,0 m in length.

In terms of lateral clearance and safety, flagmen shall stand on the shoulder of the lane of traffic that is being controlled and under no circumstances shall flagmen be permitted to stand within the traffic lane. In order to obtain maximum visual impact for the travelling public, flagmen shall stand-alone. Flagmen shall not be paid for separately with the cost included in item B1501.”

B1511 MAINTENANCE OF GRAVEL TEMPORARY DEVIATIONS AND EXISTING GRAVEL ROADS USED AS TEMPORARY DEVIATIONS

Add to Clause 1511 the following:

Where applicable, all references to gravel roads and/or diversions shall also include gravel shoulders used as diversions.

B1513 ACCOMMODATION OF TRAFFIC WHERE THE ROAD IS CONSTRUCTED IN HALF WIDTHS

Where the work on the road surface is undertaken for rehabilitation of the pavement, such work shall be carried out in areas as indicated on the drawings.

All work adjoining the carriageway shall be undertaken only when the shoulder is barricaded and the required road signs, barricades and cones have been installed as shown on the drawings or as instructed by the engineer.

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During construction, when work is in progress on one portion of the carriageway and shoulder of the road, the other portion of the road shall remain open at all times to allow for safe one-way traffic flow.

The speed of vehicles alongside actual construction areas must be limited to a maximum of 40 km/h. STOP/GO signs and flagmen shall be employed at the points where construction traffic enter the working area thus creating a potential danger situation for public traffic.

In the case of intersections, provision shall be made, where necessary, for STOP/GO signs. Intersections shall also, at all times, be able to safely carry traffic.

As soon as a section of road has been repaired or treated, the centreline shall immediately be indicated by means of pre-marking.

Amend Clause 1513 as follows:

In the third line of the third paragraph, delete "4 km" and replace with "2 km".

In the second line of the fourth paragraph, delete the word "four" and replace with "two". Also, delete "2 km" and replace with "2 km".

B1517: MEASUREMENT AND PAYMENT

Amend item 15.01 to read as follows:

Item		Unit
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B15.01 Accommodating traffic and maintaining temporary deviations:

(a) On the route kilometre (km)

Replace the first paragraph with the following:

"The unit of measurement shall be the kilometre, measured along the centre lines of the road, where work is carried out. Accommodation of traffic shall be measured once only, that is no separate payments shall be made for lane and shoulder rehabilitation, slurry, reseal, asphalt overlay, side drains, etc. The bypass for abnormal vehicles and gravel service roads shall not be measured. Only the net distance of the road shall be measured and overlapping distances during staged rehabilitation shall not be measured. A distinction shall be made between accommodation of traffic on the through road and accommodation of traffic on the ramps and cross roads of interchanges.

In the second paragraph, replace the comma after "deviations" at the start of the third line with a full stop and delete the remainder of this first sentence. Also delete the whole of the second sentence, which refers to compensation for the traffic safety officer.

In the third paragraph second sentence, insert a full stop after "use" and delete the remainder of the sentence."

B15.03 Temporary traffic-control facilities

Add the following sub-items:

Item		Unit
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Replace the payment description according to the following:

"(a) Flagmenman-day

The unit of measurement shall be a full day and night worked by flagmen. A man-day shall be deemed

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to comprise of three eight hour shifts in a twenty-four-hour period. Three shifts of eight hours per flagman equates to one man-day. Shorter single portion shifts (6 to 10 hours) shall be measured as a half man-day.”

Amend the following notes under the subheading “(b), (d), (e), (f) and (h)” in the measurement paragraphs as follows:

The tendered rate for sub item (h) shall also include full compensation for the sign stand, for the provision of two sandbags per delineator to hold it in position and for their replacement when necessary due to whatever reason. Only the standard plastic type road signs TW 401/402 (Old DTG 50 J) will be allowed on this contract.

Amend payment paragraph (j) to read as follows:

“The unit of measurement shall be the number of cones provided over and above those indicated on the drawings as required by the engineer. Payment for these cones shall include supply, re-use or removal of the traffic cones as necessary.”

Under the subheading “General” add the following to the last paragraph:

“Only items additional to those shown on the drawings are scheduled for payment.”

Item	Unit
B15.14	Penalty to be deducted for non-compliance with requirements for accommodation of traffic
(a) Fixed penalty per occurrence	number (No)
(b) Time related penalty	hour (h)

In subitem B15.14(a) a fixed penalty of R5 000.00 per occurrence shall be deducted for each and every occurrence of non-compliance with any of the requirements of section 1500 of the standard specifications and section B1500 of the project specifications.

In addition, in subitem B15.14 (b), a time-related penalty of R500.00 per hour over and above the fixed penalty in subitem B15.14 (a) shall be deducted for non-compliance to rectify any defects in the accommodation of traffic within reasonable time after the engineer has given an instruction to this effect. The engineer’s instruction shall state the time in hours for re-instatement of the defects. Should the contractor fail to adhere to the instruction, the time-related penalty will be applied from the time the instruction was given.

B15.15 **Provision of traffic safety equipment for visitors**

Item	Unit
(a) Safety jackets.....	number (No)

The unit of measurement shall be the number of each item provided as specified, and approved by the engineer.

The tendered rates for the various safety items shall include full compensation for provision thereof and maintenance in good working order.

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Item	Unit
B15.16	
Non-specified signage ordered by the Engineer and Site Safety officer:	
(a)Provisional sum for non-specified signage or arrangements as ordered by the Engineer	provisional sum (prov. Sum)
(b)Handling cost and profit in respect of Item B15.17(a)	Percentage (%)

The provisional sum items shall be paid in accordance with the provisions of the General Conditions of contract as amended if applicable. The tendered percentage is a percentage of the amount actually spent under the items agreed and shall include full compensation including profit etc. for items as ordered by the engineer.”

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SECTION B1600: OVERHAUL

B1602 DEFINITIONS

(a) Overhaul material

Add the following new sub-sub clause:

- (vii) No overhaul shall be payable on commercial materials such as asphalt, ready mix concrete, crushed stone, etc. used on the project for which the overhaul shall be included in the rate tendered".

(b) Overhaul

Replace the sub-clause with:

"Payment shall only be made for material hauled in excess of 5 kilometres. Overhaul shall be measured as the product of the volume of material hauled and the overhauled distance.

(d) Free-haul distance

Replace the last sentence with:

"This distance shall be 5 kilometre in the case of all overhaul materials"

B1603 MEASUREMENT AND PAYMENT

Amend item 16.02 as follows:

Item	Unit
B16.02 Overhaul on material hauled in excess of 5,0km	cubic meter - kilometre (m ³ -km)

Delete the first paragraph of the first set of notes."

SECTION 1700: CLEARING AND GRUBBING

B1702: DESCRIPTION OF WORK

(a) Clearing

Add the following:

“Clearing shall not be undertaken outside the road prism finishing toe line. Clearing shall include the removal of material to a thickness of up to 150mm in-situ material as ordered by the engineer before roadbed compaction below existing ground level or excavation of cuttings commences. No payment shall be made for temporary stockpiling of topsoil material in the case where this material is applied as topsoil after completion of roadside slopes.

Should the required depth exceed 150mm, the total volume of material removed shall either be classified as “temporary stockpiling of topsoil” or “unsuitable roadbed material” or “cut to spoil” whichever is applicable as allowed for in the standard specifications. In these cases no payment shall be made for clearing and grubbing.

Clearing as described shall in all cases be undertaken in such a manner that the topsoil is preserved and not contaminated with other debris or rubbish. Cross-sections for the determination of earthworks quantities, where applicable, shall be taken after clearing (topsoil or unsuitable roadbed material) and roadbed preparation if applicable.”

(c) Conservation of Topsoil

Add to the end of the 1st paragraph:

“The contractor will not be required to remove topsoil to more than an average depth of 200mm, from any particular area. The depth of topsoil removed shall be reliant on the terrain, suitability of material and topsoil requirements of the work.”

Replace the second paragraph of this clause with the following:

“After clearing and grubbing, all topsoil shall be removed to stockpiles as agreed with the Engineer. Where ordered by the engineer, any topsoil that shall be required for the topsoiling of new banks and cuts, but which cannot be accommodated within the construction site, shall be loaded and hauled to the designated stockpile area where it shall be placed in temporary stockpiles for later use in the rehabilitation of the site affected by construction activities. Where new borrow pits are to be opened up the topsoil shall first be removed (independently of the overburden) and placed in temporary stockpiles inside the parameters of the borrow pit. The moving of topsoil from windrow or the loading of topsoil from temporary stockpiles and the placing and spreading thereof on cut or fill slopes or on borrow pit soil sites, is covered in Section 5800.

Reference to clause 5802 (g) of this project specification and stipulations of relevant documentation are required”.

Add the following new subclause:

“(e) Clearing and grubbing by hand or similar means

Where clearing and grubbing cannot be undertaken by means of normal construction machinery, the engineer may order clearing and grubbing to be undertaken using hand methods. This method of clearing and grubbing will normally apply to existing steep fill embankments or cut slopes where widening of the existing road is specified or other restricted areas indicated by the engineer. Separate payment for this method of clearing and grubbing is allowed under payment item B17.01(b) of these project specifications.”

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B1704 MEASUREMENT AND PAYMENT

Amend item 17.01 to read as follows:

Item	Unit
B17.01 Clearing and grubbing	
B17.01 Clearing and grubbing:	
(a) Using normal construction machinery	hectare (ha)
(b) Using hand methods	hectare (ha)

Measurement and payment for subitem B17.01(a) shall be as specified for item 17.01 of the standard specifications. The unit of measurement for subitem B17.01(b) shall be the hectare of clearing and grubbing using hand methods. The tendered rate shall include full compensation for all labour and appropriate hand-held tools to execute clearing and grubbing by hand to the standard as specified for normal clearing and grubbing.

Add to Payment Item 17.01 the following:

“Clearing and grubbing of the construction camp sites shall not be measured separately and shall be deemed to be included in the rates tendered for item B13.01

Within the road reserves clearing and grubbing will only be measured and paid for where required for road works. All topsoil removed in this process must be stockpiled in heaps not exceeding 1 m height for later use during rehabilitation and landscaping.”

Add the following new items:

Item	Unit
B17.07 Trimming of existing trees:	
(State equipment or labour).....	hour (h)

The unit of measurement shall be the hour for the item of equipment or personnel. Non-working hours for transport breakdown, lack of operator of any other reason shall not be measured. The time shall be taken from the time that the personnel and/or equipment depart until return from the site offices.

Measurement shall only be for work instructed and directed by the contract engineer.

The tendered rates for labour under B17.07 shall include full compensation to cover overhead charges and profit, leave pay, bonuses, subsistence, allowances, Employer's contributions, additional payment for overtime where applicable, insurances, housing, site supervision, use of small hand tools and appliances, non-mechanical plant and equipment and consumable stores, for all administrative, supervisory, operative and contingent costs, relating to the supply of personnel.

The tendered rates for plant for item B17.07 shall be an all-inclusive hire charge for the use of the vehicle and driver or plant/equipment and operator and shall apply only to vehicles plant and equipment nominated in writing by the contract engineer, for all administrative, supervisory, operative and contingent cost, and profit relating to the running of the plant.

The above mentioned tendered rates shall be full compensation for the various items as specified and no further profit shall be paid. The tendered rate shall be fully inclusive of all costs and overheads as applicable.

The total cost tendered under this item shall be accepted to be a provisional sum in terms of the Conditions of Contract.

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SECTION 1800: DAYWORKS

Refer to the particular specification **Section C3.3 - Part D: Dayworks**.

SECTION 2200: PREFABRICATED CULVERTS

B2201 SCOPE

Add to Clause 2201 the following:

This section also covers work associated with the removal of existing pipes and their inlet and outlet structures. Due to the nature of the project, the Contractor can expect that works associated with the installation of pipe culverts will have to be carried out under traffic.

B2204 CONSTRUCTION METHODS

Add to Clause 2204 the following:

Generally, prefabricated stormwater drainage pipes and rectangular culverts will be installed using the 'trench method'. Installation in half widths can be anticipated.

B2210 LAYING AND BEDDING OF PREFABRICATED CULVERTS

(f) General

Add to Sub-clause 2210(f) the following:

Pipe culverts have been designed to the positions, lengths and elevations shown on the drawings. However, site conditions may dictate that changes are necessary. Any such changes will be agreed with the Engineer and recorded in writing.

B2211 BACKFILLING OF PREFABRICATED CULVERTS

Add to the fourth paragraph of Clause 2211 the following:

Where backfilling is done in the upper layers of the road formation, the quality and strength of the backfill material shall at least match that of the surrounding layers.

B2212 INLET AND OUTLET STRUCTURES, CATCHPITS AND MANHOLES

Add to Sub-clause 2212(c) the following:

"Under this contract, no inlet and outlet structures at culverts (head- and wingwalls) shall be constructed from brickwork"

Add to Clause 2212 the following new sub-clause (j):

(i) Subsurface drain outlet into catch-pits and manholes

Where required, sub-surface drain pipes shall be led into standard stormwater catchpits or manholes, as shown on the drawings or as directed by the Engineer. This shall be done either by making provision during the construction of the chamber, or by breaking out and making good after completion of the chamber.

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B2218 MEASUREMENT AND PAYMENT

Item

Unit

B22.02 Backfilling

Replace the last sentence in the fourth paragraph with:

“...including a free haul of 5,0km.”

SECTION 2300 : CONCRETE KERBING, CONCRETE CHANNELLING, CHUTES AND DOWNPIPES AND CONCRETE LININGS FOR OPEN DRAINS

B2304 CONSTRUCTION

(g) Concrete-lined open drains

Add the following:

"Before construction of concrete open drains, the bedding shall be prepared as described in Clause 2102. The bedding shall be compacted for at least 150mm to a minimum density of 93% of modified AASHTO density.

Before placing the concrete, the bedding shall be watered without having pools of water standing in the excavation."

(k) Cutting existing bituminous surfacing and pavement layers

Add the following:

"All concrete side drains, adjacent to the pavement, shall be constructed after completion of the asphalt or block paving surfacing that shall be trimmed as specified. In the case of, it asphalt shall be protected by placing a polyethylene sheet, at least 600mm wide inside the cut face and folded back over the asphalt. After the concrete has dried, the sheet shall be neatly cut level with the surface."

Add the following new subclauses:

(l) Shrinkage joints for cast in-situ concrete work.

Unless shown otherwise on the drawings, cast in situ channels shall be provided with shrinkage joints spaced a maximum of 2m apart. Shrinkage joints shall be constructed so that shrinkage cracks are generated at the joints. Sections of channel which have cracked between shrinkage joints shall be removed and replaced by the contractor at his own cost.

(m) Formwork and finish

All visible edges of cast in-situ channels shall be rounded with a rounding tool. Formwork and finish of concrete kerbs and linings shall comply with the requirements of section 6200. Templates for cast in-situ drains shall consist of 3mm thick steel plate. All visible edges on the sides or at joints of cast in-situ concrete kerbs or channels shall be neatly rounded with a rounding tool.

B2307 MEASUREMENT AND PAYMENT

Item

B23.07 Trimming of excavations for concrete-lined open drains

Delete the second sentence of the second paragraph and replace with the following:

"All excavation, backfilling, compaction and other requirements to establish the bedding for concrete-lined drains shall be included in the tendered rates for trimming of excavations."

Amend the following payment items:

Item

23.14 Cutting bituminous surfacing and pavement layers for concrete kerbing, channelling and concrete lined drains

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To read as

“B23.14 Cutting block paving surfacing and pavement layers for concrete kerbing, channelling and concrete lined drains”

Item	Unit
B23.16 Concrete edge beam (200mm x 150mm) Class 30/19 concrete	metre(m)

The unit of measurement shall be the cubic metre of concrete edge beam complete as constructed, measured along the front face of the concrete edge beam.

The tendered rate for each per metre of concrete edge beam shall include full compensation for the necessary excavation, backfilling, preparation of bedding, formwork, furnishing and installing all materials, protecting it against staining, protecting the existing road surface from contamination with concrete, placing of concrete, curing of concrete and protecting the concrete edge beam from damage by traffic.

The tendered rate shall also include full compensation for cutting the edge of the surfacing with a mechanical saw to a minimum depth of 75 mm.”

SECTION 3100: BORROW MATERIALS

B3102 NEGOTIATIONS WITH OWNERS AND AUTHORITIES

Add to Sub-clause 3102(a) the following:

The Contractor may be required to effect the payment of compensation to the affected land owners when ordered to do so by the Engineer. In this case, the costs will be recovered via the Provisional Sum allowed in PART C of the Schedule of Quantities.

The Contractor will be responsible for the arrangements associated with constructing suitable accesses to the borrow pits.

B3103 OBTAINING BORROW MATERIALS

(a) General

Add to Sub-clause 3103(a) the following:

The Contractor shall note that natural materials which meet the requirements for the selected and sub-base layers are scarce, even when the properties are improved via stabilisation. Therefore, careful selection of materials will be required in the borrow pits. The Contractor shall refer to Section 3200 of the standard specifications with regard to his liabilities in respect of the contamination of good quality materials.

B3104 OPENING AND WORKING BORROW PITS AND HAUL ROADS

(a) Removing topsoil

Add to Sub-clause 3104(a) the following:

The topsoil to be stockpiled shall be placed between the Road and the physical borrow pit area so as to provide a temporary visual screen in front of the borrow activities. The topsoil shall not be stockpiled for longer than 3 months, nor shall the stockpile be higher than 2,5m.

(g) Unproclaimed private access roads

The Contractor is responsible for proper maintenance of haul roads in cases where the material from the borrow pit areas has to be transported over secondary, tertiary, private or access roads. At the completion of activities in the borrow pits, the haul roads shall be restored to their original state and to the satisfaction of the Engineer.

Expropriation of borrow pits on private property by the Employer, will include access roads to the borrow pits. However, the Contractor is fully responsible for negotiating details of the right of access to the borrow pits with the private owners as well as for the building, maintenance and later removal of all access roads.

No additional payment will be made for this work and full remuneration will be deemed to be included in the tendered rates for the various items where the material is to be used.

B3105 FINISHING OFF BORROW AREAS

There shall be no measurement of Intermediate class finishing. All finishing that is not Hard shall be deemed as Soft.

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B3108 MEASUREMENT AND PAYMENT

Add the following new pay items:

Item	Unit
B31.04 Construction and maintenance of haul roads for materials from borrow pits and quarries (specify type)	kilometre (km)

The unit of measurement for items B31.04 shall be the km of haul road constructed and maintained.

The tendered rate shall include for all items required to construct and maintain the road such as clearing and grubbing, roadbed preparation, cut and fill, pavement layers, watering and frequently blading and re-graveling to keep the road to an acceptable standard for the use of public traffic.

Payment shall be made in two instalments. The first payment of 80% after the road has been completed to an acceptable standard and the final instalment after completion of the earthworks, the borrow pit has been finished off and the haul road has been treated as agreed with land owners and the engineer.

Item	Unit
B31.05 Exploration of borrow pits:	
(a) Sampling of borrow materials by an approved materials laboratory	prime cost sum (P.C. Sum)
(b) Handling cost and profit in respect of Item B31.05(a).....	Percentage (%)

The prime cost sum item shall be paid in accordance with the provisions of the General Conditions of contract as amended if applicable. The tendered percentage is a percentage of the amount actually spent under the items agreed and shall include full compensation for handling costs and profit and all other incidentals for arranging and making payments for the exploration of borrow pits.

Item	Unit
B31.06 Royalties for the use of borrow pit	
(a) Royalty as agreed with Employer	Provisional sum
(b) Handling Cost and profit in respect of Sub-item B31.06(a)	percentage (%)

The provisional sum item shall be paid in accordance with the provisions of the General Conditions of contract as amended if applicable. The tendered percentage is a percentage of the amount actually spent under the items agreed and shall include full compensation including profit etc. for items as ordered by the engineer."

Add to the notes at the end of the payment items under Clause 3108 the following:

(3) The tendered rate shall include full compensation for all moneys payable and all expenses incurred by the Contractor for the acquisition of all material for the proper completion of the works, irrespective of whether the material is obtained from borrow pits indicated in the Materials Information included in this document, from additional borrow pits identified by the Engineer, from commercial sources, or from borrow pits obtained by the Contractor himself.

SECTION 3300: MASS EARTHWORKS

B3301 SCOPE

Add to Clause 3301 the following:

“The Contractor shall note the restricted nature of the earthworks in general, and where the widening of existing cuts and fills are required in particular. No extra over rates for widening of cuts, widening of fills or for working in restricted areas shall be applicable to this Contract.”

B3303 CLASSIFICATION OF CUT AND BORROW

Add to Clause 3302 the following:

“All material excavated from the existing road prism including subgrade, subbase, base, seals and shoulders shall be classified as soft material. No additional payment will be made for other classes of material excavated from the road prism.”

(a) Classes of excavation

Add to Sub-clause 3303(a) the following:

“Soft excavation shall be excavation in material which can be efficiently ripped by a bulldozer with a mass of at least 35 tons when fitted with single tine ripper and an engine developing approximately 220 kW at the flywheel”.

Remove item 3303 (a)(ii) Intermediate excavation. There will be no intermediate material measured in this contract and except from blasting all excavations must be considered as soft excavation.

Cut material for fills will, apart from natural in-situ material, also consist of existing fill and pavement layers from the existing road. Excavation from existing fill and pavement layers varies in depth, but no distinction is made between this excavation and excavation in other materials, except for classification as soft, intermediate and hard materials.”

Payment items 33.14 and 33.15 will not apply on this Contract.

B3306 CUT AND BORROW

(a) Dimensions of Cuts

Delete the third paragraph from Clause 3306(a), apart from the first sentence thereof.

Add the following:

Cut and borrow to fill will be measured under Item 33.01. The Contractor shall take note of the nature of the earthworks alongside the existing road. No extra over payments will be made in respect of the nature of the site or due to the dimensions of a particular cutting.

B3307 FILLS

a) General

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Add the following:

"Where existing embankments are to be widened, or where new embankments are to be constructed adjacent to existing embankments, the existing side slopes shall be benched as specified in sub clause 3307(d) and in accordance with the details on the drawings.

In addition, the material in the fill widening shall, unless otherwise instructed by the engineer, be compacted as follows:

(i) where the thickness exceeds 1,5m, it shall be compacted to a minimum of 93% modified AASHTO density to a depth of at least 1,5m below the final road level; or

(ii) where the thickness is less than 1,5m, the in situ roadbed and fill material shall be compacted to 93% modified AASHTO density."

(c) Constructing a pioneer layer

Add the following to the first paragraph:

"For the purpose of this contract, pioneer layers shall be compacted by means of eight-pass roller compaction using vibratory rollers as specified in subclause 3304(b) of the standard specifications. Suitable coarse rock material, up to a maximum size of 500 mm, obtained from commercial quarries, shall be used for the construction of pioneer layers."

d) Benching

Replace the first sentence of the second paragraph with the following:

"It is a requirement that benching shall always be started at the bottom of the existing fill progressing to the top of the formation. The dimensions of benches as well as the extent to which existing fills have to be cut back to form benches shall be as indicated on the drawings or indicated by the engineer."

Add the following after the second paragraph:

"In order to obtain sufficient working width for road-building equipment when the existing road fill is widened, it may be necessary to form benches that extend beyond the normal road prism or to cut back into the existing road fill or both. The contractor shall submit his proposals in this regard to the engineer for approval before proceeding with such work. The contractor will be paid in accordance with the relevant payment items for work required to obtain a working width of up to 4 m. Additional work required to provide a working width in excess of 4m shall be at the contractor's expense. "

(i) Widening of fills

In the eight paragraph of Sub-clause 3307(i), delete the sentence "An extra over payment for the widening of existing fills will apply under Item 13.16."

Add the following:

No extra over payments will be made in respect of the nature of the site or due to the dimensions of the

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fills being widened or constructed.

Add the following new sub-subclause:

“(k) Stormwater drainage of fills and fill slopes:

Should erosion occur on the outside slopes of the embankment resulting in scour of the embankment, such erosion shall be benched and backfilled before the placing of any pavement materials on the road embankment.

B3312 MEASUREMENT AND PAYMENT

General directions

Delete Note (3) Work in Restricted Areas and replace with the following:

On this Contract, no extra over payment will be made due to the nature of the site or the size of the work area available. All costs associated with carrying out the works are deemed to be included in the tendered rates for the items in the Schedule of Quantities.

Amend the payment items under Clause 3312 as follows:

Item

B33.01 Cut and borrow to fill, including free-haul up to 5km:

In the description of Item 33.01, delete "free-haul up to 0.5 km" and replace with "free- haul up to 5.0 km."

In the fifth paragraph, referring to the tendered rates, delete the words "free-haul distance of 0.5 km" and replace with "free-haul distance of 5.0 km."

Also in the fifth paragraph, after the words "the cutting of benches" insert the words "including benches in existing fill slopes to be widened."

Item

B33.02 Sand fills (as described in clause 3302, incl free-haul up to 5,0km:

In the description of Item 33.02, delete "free-haul up to 0.5 km" and replace with "free-haul up to 5.0 km."

In the final paragraph delete "0.5 km free-haul" and replace with "5.0 km free-haul."

Item

B33.04 Cut to spoil including free-haul up to 5,0km:

B33.04 In the description of Item 33.04, delete "free-haul up to 0.5 km" and replace with "free-haul up to 5.0 km."

In the fourth paragraph delete "free-haul distance of 0.5 km" and replace with "free-haul distance of 5.0 km."

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Item

B33.07 Removal of unsuitable material, including free-up to 5,0km:

B33.07 In the description of Item 33.07, delete "free-haul up to 0.5 km" and replace with "free-haul up to 5.0 km."

In the fourth paragraph delete "free-haul distance of 0.5 km" and replace with "free-haul distance of 5.0 km."

SECTION 3400: PAVEMENT LAYERS OF GRAVEL MATERIAL

B3402 MATERIALS

a) General

The following changes are applicable:

“The maximum size for the crushed G5 material in Table 3402/1 shall be 53mm.

Table 3402/1, the grading requirements for G5 type crushed (commercial) material for the fraction passing the 2,00mm sieve shall be changed to read “nor more than 60%.”

In Table 3402/2 of the specification change the CBR specified for G7 and G8 material as follows:

G7 : 20% at 93% of modified AASHTO density

G8 : 15% at 93% of modified density

Add the following at the end of the second paragraph:

"For chemically stabilised layers the material shall conform to the requirements in table B3402/5." For cold in situ recycled layers the target grading shall be as indicated in table B3402/7"

Replace Table 3402/5 with:

"TABLE B3402/5: REQUIREMENTS FOR CHEMICALLY STABILISED LAYERS

Classification	C1	C2	C3	C4
Material before treatment	At least G2 quality	At least G4 quality	At least G5 quality	At least G6 quality
PI after treatment	Non-plastic	Non-plastic	6 max. *(1)	6 max. *(1)
UCS (MPa) *(2)	6 min.	4 min.	1,5 min	0,75 min.
ITS (kPa) *(3)	-	-	250 min.	200 min.
WDD (% loss)	5 max.	10 max.	20 max.	30 max.

Note:

*(1) For materials derived from the basic crystalline rock group, the Plasticity Index after stabilisation shall be non-plastic.

* (2) Unconfined Compressive Strength @ 100% Mod. AASHTO density

* (3) Indirect tensile Strength @ 100% Mod. AASHTO density (Rapid Curing) * (4) Wet/Dry

TABLE B3402/7: TARGET GRADING ENVELOPE FOR COLD IN SITU RECYCLED PAVEMENT LAYERS

Sieve Size (mm)	Percent Passing
	Cement / Lime
50	100
37.5	87 – 100
28	82 – 100
20	72 - 100
14	60 -90
10	51 - 77
7.1	42 -65
5	36 - 57
0.425	12 – 26
0.075	4 - 10

b) Compaction requirements

Amend the compaction requirements as follows:

Fill Material 93% MOD AASHTO

Lower selected layer 93% MOD AASHTO – G7

Upper selected layer: 95% MOD AASHTO – G7

Subbase (insitu or G5 imported): 95% MOD AASHTO

Shoulder material (Where applicable) 95% MOD AASHTO- G5

Add the following:

“The compaction of recycled material, stabilized with chemical agents and placed as subbase pavement layers in one operation for 300mm or more up to 400mm thickness, shall be 96% of mod. AASHTO density on average measured for the full depth of the layer with a minimum of 97% of mod. AASHTO compaction for the upper 150mm.

The compaction density shall be calculated as follows:

$$D_{(150-300)} = 2 \times D_{(0-300)} - D_{(0-150)}$$

Where

$D_{(0-150)}$ = Density as measured for 0 to 150mm layer

$D_{(0-300)}$ = Density as measured for 0 to 300mm layer

$D_{(150-300)}$ = Density as calculated for 150 to 300mm layer

B3405 CONSTRUCTION TOLERANCES

(a) Level

Replace the table in the sub-sub-clause with the following:

	H ₉₀	H _{max}
Selected layers	25 mm	30 mm
Sub-base layers	15 mm	20 mm
Base layers	12 mm	15 mm
Shoulders	20 mm	25 mm"

Add the following:

"Level control for the various pavement layers shall be done at least at the following intervals in the longitudinal direction:

Layer	Interval
Selected layer, sub-base, shoulders and wearing course	20 m
Base	10 m

(b) Layer thicknesses

Replace the table in the sub-sub-clause with the following:

	D ₉₀	D _{max}	D _{ave}
Selected layers	25 mm	35 mm	8 mm
Sub-base layers	18 mm	24 mm	5 mm
Base layers	15 mm	22 mm	5 mm"
Shoulders		30 mm	0 mm

(f) Surface regularity

Replace the second paragraph with the following:

- "(i) the average number of irregularities per 100m equal to or exceeding 5mm when taken over 300 – 600m lengths 3
- (ii) the number of irregularities equal to or exceeding 5mm when taken over 100m lengths.....4"

Add the following:

"Where transverse construction joints in layers are made between newly and previously constructed sections, the contractor shall exercise careful level control at such joints by installing level poles at 5m intervals on either side of the joint of the layer covering at least a 30m length into the newly constructed section."

B3406 QUALITY OF MATERIALS AND WORKMANSHIP

Replace the second paragraph with the following:

"Test results and measurements will be assessed in accordance with the provisions of Section 8200."

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B3407: MEASUREMENT AND PAYMENT

Change item 34.01 to read as follows:

Item	Unit
B34.01 Pavement layers constructed from gravel taken from cut or borrow, including free-haul up to 5,0 km (source and layer specified, layer thickness and compaction indicated)	cubic metre (m ³)

SECTION B3500: STABILIZATION

B3501 SCOPE

Add the following:

“In terms of chemically stabilized pavement layers, the contractor shall allow in his programme of work a period of at least 3 weeks for the Engineer to confirm the stabilization designs of relevant pavement materials in order to determine the required dosages of stabilising agent. The actual application rate of the stabilizing agent for the specific material or layer shall however remain the Contractor’s responsibility in terms of the acceptance of the pavement specified.

The actual quantity of stabilizing agent agreed to shall be payable.”

B3502 MATERIALS

a) Chemical stabilizing agents

Delete sub-clauses (ii) Ordinary Portland cement and (iii) Portland blast-furnace cement and replace with the following:

“Cement shall comply with the relevant requirements of SANS 50197-1:2000. The use of strength classes greater than 32,5 shall not be permitted.

On this contract CEM II(B-L)32.5N shall be used for stabilization purposes. The use of other types of cement shall be subject to laboratory testing and to the approval of the engineer with no additional payment applicable for higher application rates resulting from the use of such other types of stabilizing agents.

The contractor shall provide all labour, plant, materials, transport, accommodation of traffic and all other incidentals to sample the necessary materials to undertake the stabilisation design as ordered by the Engineer.”

B3503 CHEMICAL STABILIZATION

a) Preparing the layer

Insert the following before the first paragraph:

“Moisture content tests shall not be undertaken more than one day in advance of in situ stabilization operations. Care shall be taken to ensure that samples are representative of the in situ material. Checks shall be conducted when wet weather occurs between initial testing and work commencing on any section.”

b) Applying the stabilizing agent

Replace the second sentence of the second paragraph with the following:

“Under this Contract, stabilizing agent shall be provided in pockets to be packed out onto the layer to be stabilized. Mechanical spreaders shall not be allowed. Spreading of stabilizing agent shall always be done by hand, using rubber squeegees to evenly spread the agent before mixing of the material may commence. Double application of stabilizer at construction joints shall not be allowed except as

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specifically shown on drawings or for re-working of layers when required.

Spreading shall only commence when the engineer is satisfied that the correct quantity of stabilizing agent has been placed on the layer and has given permission that the stabilizing agent may be spread uniformly over the entire surface to be treated."

(d) Mixing in the stabilizing agent

Replace second paragraph with the following:

"Mixing shall be done with a recycling unit capable of milling and recycling of material to a depth up to 300mm minimum and a width up to 2,0m. The Contractor shall control the length of sections of subbase layer construction in such a manner that the specified time limitations for processing of cemented layers as specified shall not be exceeded.

Before recycling for stabilization commences, the stabilizing agent shall be manually spread to obtain the correct application rate. The recycler shall mix in the stabilizer together with the required metered quantity of water.

Where the required stabilising agent dosage is such that a build-up of the agent is noted in front of the recycling unit, the layer shall first be treated with light ripping by a motor-grader to a depth not exceeding 100 mm. No separate payment shall be applicable to the ripping operation.

Where two adjacent lanes are reworked the longitudinal overlap shall be maintained along recycled strips of stabilized material in such a manner that final recycling longitudinal joints are in the centre of travel lanes or on the painted lines demarcating the travel lanes. The Contractor shall submit his stabilization plan to the Engineer for his approval. Where the width of the layer to be stabilized is such that part of the width of recycling falls within the gravel shoulder outside the stabilizing limits, payment under item B35.01 shall only be applicable to the stabilized part of the recycled width. Double recycling of material with cement and water added shall not be allowed. The contractor shall plan his recycling activities in accordance with the above limitation and/or by applying a recycler of suitable width. If recycling plan is such that double recycling of material is applicable, cement and water shall only be applied to the final recycling process. Material which is double worked shall not be paid for.

The rotating drum speed of the recycling machine and the moving forward of the machine shall be such that the grading of the material is not significantly changed to fall outside the specified grading limits of the materials used in the layer."

(f) Compaction

Add the following:

"Material placed for chemical stabilization shall, prior to the applying and mixing in of the stabilizing agent, be lightly compacted with 3-pass static rolling (vibratory roller in static mode). Payment for this required operation is allowed for in item 33.11. Once the mixing in of the stabilizing agent by means of a recycling unit is completed, the layer immediately behind the recycle unit shall be compacted by means of 3-pass or more vibratory rolling (roller as specified in subclause 3304(b)) or until the rubber wheel footprints of the recycler is completely removed. Level cutting shall follow this compaction before final processing and compaction of the layer is commenced with. No additional payment will be considered for this requirement which shall form part of the compaction process."

h) Curing the stabilized work

Add the following paragraph:

"Curing of stabilized pavement layers shall be undertaken in accordance with protection method (ii) as specified. Any other method of curing shall only be allowed in special circumstances as agreed to by the Engineer, but no additional payment whatsoever over and above that allowed for in item 35.05 shall be made. Method (iii) and (iv) shall not be applicable on gravel stabilized layers. The curing of stabilized subbase layers by covering with gravel material where applicable will be dependent on the availability of the G5 base material and must be incorporated in the contractor's programme of work.

Curing of stabilized pavement layers for the construction of the stabilised base for interlocking paving roads shall be undertaken in accordance with protection method (i) as specified.

Add the following to method (ii):

"The covering material shall be placed by end-tipping, spread, and not compacted until the underlying layer has cured for at least 7 days."

i) Construction limitations

Replace the fourth paragraph starting with "No stabilization ..." with the following:

"No stabilization shall be done during windy conditions, wet weather or with falling air temperatures (7°C and dropping), or during rising air temperatures (when the air temperature is below 3°C).

The surface temperature of a compacted stabilized layer shall not be allowed to fall below 1°C during the first three (3) days after stabilization. The contractor shall be responsible for taking the necessary precautions to prevent the layer from freezing.

All stabilized layers damaged by rain, frost or by the formation of ice in the layer shall be removed and replaced by the contractor at his own expense.

The contractor shall make allowance for these requirements in his construction programme."

In Table 3503/1, delete "8 hours" for Ordinary portland cements and cement blends and replace with "6 hours".

B3507 CONSTRUCTION OF TRIAL SECTION

Insert the following before the second paragraph:

"Prior to carrying out the trial section for cold in situ recycling, the contractor shall assemble all items of plant and equipment that he proposes to use for the recycling operation. Only those machines he intends using for production work shall be used to construct the trial section and under no circumstances shall he be permitted to use any substitutes. The first section of pavement to be recycled shall be regarded as a trial section with the objective of:

- demonstrating that the equipment and processes he proposes to employ are capable of constructing the recycled layer in accordance with the specified requirements;

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- determining the effect on the grading of the recycled material by varying the forward speed of the recycling machine and the rate of rotation of the milling drum; and
- determining the amount of rolling necessary to achieve the compaction requirements.

The trial section shall be at least 200m in length and shall cover the full lane-width or half-road width in accordance with the geometry of the road and the accepted work plan.

To allow the engineer sufficient time to assess all aspects of quality of the completed trial section and contingent on the results being satisfactory, the contractor shall programme to start production recycling work no sooner than one week after constructing the trial section.

Should the contractor make any alterations in the methods, processes, equipment or materials used, or if he is unable to comply consistently with the specifications due to variations in the in situ material, or for any other reason, he may be required to undertake further trial sections before continuing with the permanent work.”

Insert the following new paragraph after the third paragraph:

“For cold in situ recycling provision is made for payment for the first approved trial section. Such payment will be made as an extra-over to the various payment items for recycling work together with all additives that will be measured and paid as normal production work. Any further trial sections ordered by the engineer shall likewise be paid provided they are approved.”

B3509 QUALITY OF MATERIALS AND WORKMANSHIP

Add the following after the second paragraph:

Add the following paragraphs:

"The engineer shall be notified in good time to enable him to conduct tests himself.

Sample preparation and testing for cement stabilization testing shall be done by means of the Rapid Cure Method as described in clause B8110.

The stabilized material sampled from the layer for the compaction of modified AASHTO briquettes, shall be prepared according to SANS 3001; GR54; ie discard material coarser than a 37,5 mm test sieve, and compacted according to SANS 3001; GR31.

Any delamination of the completed layer (biscuiting), identified by the hollow sound caused when a chain is dragged over the stabilized layer, shall be removed and repaired prior to the construction of subsequent layers. The repair method shall be approved by the engineer. No payment will be made for repairs.

(a) Process control for cold in situ recycling

The contractor shall establish a comprehensive process control system for the recycling work.

The following daily reports shall be submitted as a minimum:

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- The production plan;
- The completed pre-start check list;
- Weather conditions and temperature measurements;
- Details of the recycling work completed during the day with the following information for each cut that was made:
 - start and end chainage;
 - depth of cut (including a schedule of dip measurements);
 - width of application of stabilising agent(s);
 - nozzle settings (closures) for each spray bar (where relevant);
 - computer data input;
 - cement / lime spreading check measurements (where relevant); and
- Where the material is treated with a bitumen stabilising agent, the following shall be included:
 - bitumen emulsion or Pen-grade bitumen consumption;
 - average temperature and pressure measured at the spray bar; and
 - all other details shown in the sample report included in the Appendices of the latest edition of SAPEM and TG2:
- Relevant comments / information concerning the recycling operation. These shall include but shall not be limited to:
 - standing time and the reason(s);
 - sections where in situ pavement conditions changed together with a description of the change (e.g. thick asphalt between km 1+200 and km 1+230 in Cut #2);
 - details of any non-routine tests that were undertaken;
 - any changes in the weather during the day (e.g. strong wind from 13:00); and
 - relevant instructions received and from whom; and
- The location where the daily sample of pulverised material was taken."

B3510 MEASUREMENT AND PAYMENT

Change item 35.01 to B35.01 with the heading as follows:

Item	Unit
B35.01 Chemical stabilization (layer thickness indicated) extra over unstabilized layers (layers and materials to be stabilized to be indicated)	cubic metre (m ³)

Add the following to pay-item 35.02:

"The quantity of stabilizing agents indicated in the schedule is a nominal rate of application. Only approved quantities will be paid for at the rates tendered."

Add the following to pay-item 35.03:

"Mechanical modification shall not be paid for different materials if mixed with the recycle machine."

Item	Unit
B35.02 Chemical stabilizing agent	

Replace the full stop at the end of the third paragraph with the following:

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" and layer dimensions."

Change item 35.13 to read as follows:

Item	Unit
B35.13 Extra over item B35.01 for trial sections.....	cubic metre (m ³)”

Measurement and payment shall be as for item 35.13.”

SECTION B5100: PITCHING, STONEMWORK AND PROTECTION AGAINST EROSION

B5102 Materials

a) Stone

Replace the 2nd paragraph with the following:

“Unless suitable stone can be located on site, the stone for pitching shall come from commercial sources but, from whatever source, its use shall be subject to the prior approval of the engineer.”

c) Sand

(ii) Sand for bedding

Replace this sub-sub-clause with the following:

Sand for bedding used for paving blocks shall not contain any deleterious impurities and shall comply with the requirements given in Table B5102/1.

TABLE B5102/1

Sieve size (mm)	Percentage passing
10	100
5	95 – 100
2	73 – 86
1	43 - 78
0,600	25 – 60
0,300	10 - 30
0,150	5 – 15
0,075	5 - 10

Note:

Refer to standard COLTO table for COLTO grading if required

B5106 SEGMENTAL BLOCK PAVING

d) Edge beams

Add the following paragraph:

“Where concrete edge beams are constructed the relevant specifications under section 2300 shall apply.”

B5108 MEASUREMENT AND PAYMENT

Amend the following payment items:

Item	Unit
B51.04 Concrete pitching and block paving	
(d) Prefabricated concrete paving blocks	

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(i) Roadway surfacing (type indicated).....square meter (m²)

Measurement and payment shall be as for item 51.04 of the standard specifications

Add the following paragraph:

“The rate shall cover the units that needs to be cut to fit to the edge restraints, sand bed of 25mm to be placed below paving blocks. (SABS pre-cast concrete paving blocks only)

Amend the following payment items:

Item	Unit
B51.08 Speed hump with paving blocks	No

The unit of measurement shall be the number of speed humps, complete with road marking and road signs, constructed in accordance with the drawings.

SECTION 5500: FENCING

B5514 MEASUREMENT AND PAYMENT

Add the following new payment B55.02(j) item:

Item	Unit
(j) Stock-proof fence (Standard 6 (six) strand, 1,2m high.....	Kilometre (km)

The unit of measurement shall be the length of fence per km installed complete as per the drawings.

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SECTION 5600: ROAD SIGNS

B5609 MEASUREMENT AND PAYMENT

Add the following new payment item:

Item	Unit
B56.10 Statutory signs, street names, etc. supplied and erected complete (state sign)	No

The unit of measurement shall be the number of signs (as stated). The rate shall include full compensation for procurement, delivery and installation complete with sign face, support (150mm diameter CCA treated timber post) and brackets, as instructed by the engineer and in accordance with the drawings.

SECTION 5700: ROAD MARKINGS

B5702 MATERIALS

(a) Paint

(ii) Retro-reflective road-marking paint

Add to Sub-clause 5702(a)(ii) the following:

During actual painting the Contractor shall supply sealed samples of the paint to be used to the Engineer together with details of the paint batch numbers and testing carried out on these particular batches by the paint manufacturer to prove compliance with this specification. These samples shall be kept until the end of the defects liability period.

B5704 MECHANICAL EQUIPMENT FOR PAINTING

Add to Clause 5704 the following:

The machine shall always operate in the direction of the traffic when applying lane markings.

B5707 APPLYING THE PAINT

Add the following:

“The Contractor’s establishment on site and general obligation shall be deemed to fully include the establishment of the road-marking team, irrespective of the number of times the road-marking team is required to be on site or is required to move within the site.”

B5711 GENERAL

Insert the following into the last sentence of the last paragraph between “black paint” and “or chemical paint remover”:

“, bituminous Emulsion, slurry”

Add the following to the last paragraph:

“Where black paint is used, it shall be matt.”

SECTION 5900: FINISHING THE ROAD AND ROAD RESERVE AND TREATING OLD ROADS

B5902 FINISHING THE ROAD AND ROAD RESERVE AND TREATING OLD ROADS

Add the following to the first paragraph:

“The contractor shall pay special attention to the collection and removal of all waste materials originating from the construction activities. All materials trimmed or excavated from the road shall be collected and removed from the road reserve to the satisfaction of the engineer.

This requirement shall be deemed to be incorporated in the tendered rates for item 59.01 of the bill of quantities or such other items as the contractor may decide upon.

The engineer may order additional finishing of the road reserve which will entail the collection and disposal of loose rocks etc. Payment for this work will be made under daywork items included in section 5900 of the bill of quantities as described in section 1800 of these project specifications.”

SECTION 8100: TESTING MATERIALS AND WORKMANSHIP

B8117 MEASUREMENT AND PAYMENT

Add the following new payment item:

Item	Unit
B81.04 Acceptance control	
(a) Testing by the engineer	Prime-Cost Sum (PC Sum)
(b) Handling cost and profit in respect of subitem B81.04(a).....	Percentage (%)

The prime-cost shall be paid in accordance with the provisions of the general conditions of contract. The tendered percentage is a percentage of the amount actually spent under the prime-cost item, which shall include full compensation for the handling cost of the contractor, and the profit in connection with providing the specified service.

SECTION 8200: QUALITY CONTROL (SCHEME 1)

B8201 SCOPE

Add the following to Clause 8201 of the Specifications:

Quality control shall be carried out in accordance with the requirements of Section 8200: Quality Control (Scheme 1).

B8209 PROCESS CONTROL BY THE CONTRACTOR

Add the following:

For the purpose of this Contract process or quality control by the Contractor comprises at least the following:

Soil Tests:

Field densities, maximum dry density and optimum moisture content determinations, CBR, UCS, ITS, indicator tests (grading and PI), moisture contents and chemical tests relating to stabilizing agent contents;

Concrete tests:

Slump and cube crushing strengths.

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C3.3 PARTICULAR SPECIFICATIONS

In addition to the Standardised and Project Specifications the following Particular Specifications shall apply to this contract and are bound in hereafter.

PART C	ENVIRONMENTAL MANAGEMENT SPECIFICATION
PART D	DAYWORKS
PART E	OHSA 1993 SAFETY SPECIFICATION
PART F	SMALL CONTRACTOR DEVELOPMENT, TRAINING AND COMMUNITY LIAISON

**PART C: ENVIRONMENTAL MANAGEMENT SPECIFICATION GENERIC ENVIRONMENTAL
SPECIFICATION**

1. Method Statements

The Contractor shall not commence the activity until the Method Statement has been approved and shall, except in the case of emergency activities, allow a period of two weeks for approval of the Method Statement by the Engineer/ECO. Such approval shall not unreasonably be withheld.

The Engineer/ECO may require changes to a Method Statement if the proposal does not comply with the specification or if, in the reasonable opinion of the Engineer/ECO, the proposal may result in, or carries a greater than reasonable risk of, damage to the environment in excess of that permitted by the Specifications.

Approved Method Statements shall be readily available on the site and shall be communicated to all relevant personnel. The Contractor shall carry out the Works in accordance with the approved Method Statement. Approval of the Method Statement shall not absolve the Contractor from any of his obligations or responsibilities in terms of the Contract.

2. Environmental Awareness Training

It is a requirement of this contract that environmental awareness training courses are run for all personnel on site. All employees who spend more than 1 day a week or four days in a month on Site must attend the training. Two types of course shall be run: one for the Contractors and Subcontractors management and the other one for all site staff and labourers. Courses shall be run during normal working hours at a suitable venue provided by the Contractor.

All attendees shall remain for the duration of the course and sign an attendance register that early indicates participant's names on completion, a copy of which shall be handed to the Engineer/ECO. The size of each session shall be limited to the numbers shown in the Project Specification and the Contractor shall allow for sufficient sessions to train all personnel. Subsequent sessions shall be run for any new personnel coming onto site. A Method Statement with respect to the organisation of these courses shall be submitted. Conduct revised training as and when required.

Notwithstanding the specific provisions of this clause it is incumbent upon the Contractor to convey the sentiments of the EMP to all personnel involved with the works.

2.1. Training course for management and foremen

The environmental awareness training course for management shall include all management and foremen. The course, which shall be presented by the Engineer/ECO/EO or his designated representative, is of approximately one-hour duration. The initial course shall be undertaken not more than 7 days prior to commencement of work on site.

2.2. Training course for site staff and labour

The environmental awareness training course for site staff and labour shall be presented by the Contractor from material provided by the Engineer/ECO/EO unless otherwise indicated in the Project Specification. The course is approximately one-hour long. The course shall be run not more than 7 days after commencement of work on site with sufficient sessions to accommodate all available personnel.

3. Contractor's Environmental Representative

The Contractor shall appoint an environmental representative (called an Environmental Site Officer) who shall be responsible for undertaking a daily site inspection to monitor compliance with this Specification and the relevant Project Specification. The Contractor shall forward the name of the environmental representative to the Engineer/ECO/EO for his approval seven days prior to the date of the environmental awareness training course. The Contractor's environmental representative shall complete daily Site Inspection Forms and these shall be submitted to the Engineer/ECO/EO once a week.

4. Site division, demarcation and no-go areas

The Contractor shall restrict all his activities, materials, equipment and personnel to within the area specified. The area of the site shall be fenced where possible.

A Method Statement detailing the layout and method of establishment of the construction camp (including all buildings, hostels, offices, lay down yards, vehicle wash areas, fuel storage areas, batching areas and other infrastructure required for the running of the project) shall be provided.

As required by the Project Specification, the Contractor shall erect and maintain permanent and/ or temporary fences of the type and in the locations directed by the Engineer/ECO/EO. Such fences shall, if so specified, be erected before undertaking designated activities.

If so required by the Project Specification, certain areas shall be "no go" areas. The Contractor shall ensure that, insofar as he has the authority, no person, machinery, equipment or material enters the "no go" areas at any time.

5. Access routes/ haul roads

On the Site, and, if so required by the Project Specification, within such distance of the Site as may be stated, the Contractor shall control the movement of all vehicles and plant including that of his suppliers so that they remain on designated routes, are distributed so as not to cause an undue concentration of traffic and that all relevant laws are complied with. In addition, such vehicles and plant shall be so routed and operated as to minimise disruption to regular users of the routes not on the Site. On gravel or earth roads on Site and within 500m of the Site, the vehicles of the Contractor and his suppliers shall not exceed a speed of 45 km/hr. as far as possible the Contractor shall use existing access and haul routes. Damage to the existing access roads as a result of construction activities shall be repaired to the satisfaction of the Engineer/ECO/EO, using material similar to that originally used. The cost of the repairs shall be borne by the Contractor.

6. Construction personnel information posters

As required by the Project Specification, the Contractor shall erect and maintain information posters for the information of his employees depicting actions to be taken to ensure compliance with aspects of the Specifications. Such posters shall be erected at the eating areas and any other locations specified by the Engineer/ECO/EO.

7. Fire control

No fires may be lit on site. Any fires, which occur, shall be reported to the Engineer/ECO/EO immediately. Smoking shall not be permitted in those areas where it is a fire hazard. Such areas shall include the workshop and fuel storage areas and any areas where the vegetation or other material is such as to make liable the rapid spread of an initial flame. In terms of the National

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Environmental Management: Air Quality Act and Community Fire Safety Bylaw, burning is not permitted as a disposal method.

The Contractor shall appoint a Fire Officer who shall be responsible for ensuring immediate and appropriate actions in the event of a fire and shall ensure that employees are aware of the procedure to be followed. The Contractor shall forward the name of the Fire Officer to the Engineer/ECO/EO for his approval.

The Contractor shall ensure that there is basic fire-fighting equipment available on Site at all times. This shall include at least rubber beaters when working in urban open spaces and fynbos areas, and at least one fire extinguisher of the appropriate type when welding or other "hot" activities are undertaken.

1. The Contractor shall ensure that the basic fire-fighting equipment is to the satisfaction of the Local Fire Services.
2. The Contractor shall supply all living quarters, site offices, kitchen areas, workshop areas, materials, stores and any other areas identified by the Engineer/ECO/EO with tested and approved fire fighting equipment.
3. Fire and "hot work" shall be restricted to a site approved by the Engineer/ECO/EO.
4. A braai facility may be considered at the discretion of the Engineer/ECO/EO.

8. Emergency procedures

The Contractor shall submit Method Statements to the Engineer/ECO/EO covering the procedures for the following emergencies:

i) Fire

The Contractor shall advise the relevant authority of a fire as soon as one starts and shall not wait until he can no longer control it. The Contractor shall ensure that his employees are aware of the procedure to be followed in the event of a fire.

ii) Accidental leaks and spillages

The Contractor shall ensure that his employees are aware of the procedure to be followed for dealing with spills and leaks, which shall include notifying the Engineer/ECO/EO and telephoning relevant people (from a cell phone) and the relevant authorities. The Contractor shall ensure that the necessary materials and equipment for dealing with spills and leaks is available on Site at all times. Treatment and remediation of the spill areas shall be undertaken to the reasonable satisfaction of the Engineer/ECO/EO.

In the event of a hydrocarbon spill, the source of the spillage shall be isolated, and the spillage contained. The area shall be cordoned off and secured. The Contractor shall ensure that there is always a supply of absorbent material readily available to absorb/ breakdown and where possible is designed to encapsulate minor hydrocarbon spillage. The quantity of such materials shall be able to handle a minimum of 200 l of hydrocarbon liquid spill.

9. Safety

Telephone numbers of emergency services, including the local firefighting service, shall be posted conspicuously in the Contractor's office near the telephone. In the event of an emergency, the Contractor shall contact the emergency call centre availed for that specific emergency available in the area.

No unauthorised firearms are permitted on Site.

10. Community relations

If so required by the Project Specification, the Contractor shall erect and maintain information boards in the position, quantity, design and dimensions specified. Such boards shall include contact details for complaints by members of the public in accordance with details provided by the Engineer/ECO/EO. The Contractor shall keep a "Complaints Register" on Site. The Register shall contain all contact details of the person who made the complaint, and information regarding the complaint itself.

11. Protection of natural features

The Contractor shall not deface, paint, damage or mark of any natural features (e.g. rock formations) situated in or around the Site for survey or other purposes unless agreed beforehand with the Engineer/ECO/EO. Any features affected by the Contractor in contravention of this clause shall be restored/ rehabilitated to the satisfaction of the Engineer/ECO/EO.

The Contractor shall not permit his employees to make use of any natural water sources (e.g. springs, streams, open water bodies) for the purposes of swimming, personal washing and the washing of machinery or clothes.

12. Protection of flora and fauna

Except to the extent necessary for the carrying out of the Works, flora shall not be removed, damaged or disturbed nor shall any vegetation be planted.

Trapping, poisoning and/ or shooting of animals is strictly forbidden. No domestic pets or livestock are permitted on Site.

Where the use of herbicides, pesticides and other poisonous substances has been specified, the Contractor shall submit a Method Statement.

13. Erosion and sedimentation control

The Contractor shall take all reasonable measures to limit erosion and sedimentation due to the construction activities and shall, in addition, comply with such detailed measures as may be required by the Project Specification. Where erosion and/or sedimentation, whether on or off the Site, occurs despite the Contractor complying with the foregoing, rectification shall be carried out in accordance with details specified by the Engineer/ECO/EO. Where erosion and/or sedimentation occur due to the fault of the Contractor, rectification shall be carried out to the reasonable requirements of the Engineer/ECO/EO.

Any runnels or erosion channels developed during the construction period or during the vegetation establishment period shall be backfilled and compacted, and the areas restored to a proper condition. Stabilisation of cleared areas to prevent and control erosion shall be actively managed. The method of stabilisation shall be determined in consultation with the Engineer/ECO/EO.

14. Aesthetics

The Contractor shall take reasonable measures to ensure that construction activities do not have an unreasonable impact on the aesthetics of the area

15. Recreation

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If so required by the Project Specification, the Contractor shall take measures to reduce disruption to recreational users of the area abutting the Site.

17. Temporary site closure

If the Site is closed for a period exceeding one week, the Contractor in consultation with the Engineer/ECO/EO shall carry out the checklist procedure required by the Project Specification. In the event of temporary site closure, the Contractor's Safety Officers (as defined by the Occupational Health and Safety Act) shall check the site, ensure that the conditions contained in the Detailed Specification.

18. Tolerances

Environmental management is concerned not only with the final results of the Contractor's operations to carry out the Works but also with the control of how those operations are carried out. Tolerance with respect to environmental matters applies not only to the finished product but also to the standard of the day-to-day operations required to complete the Works.

It is thus required that the Contractor shall comply with the environmental requirements on an ongoing basis and any failure on his part to do so will entitle the Engineer/ECO/EO to certify the imposition of a fine subject to the details set out in the Project Specification

PART D: DAYWORKS

This part of the Project Specifications deals with the provision for Dayworks in the Bill of Quantities. Rates for Dayworks shall be entered in Dayworks Schedule of the Bill of Quantities in accordance with the following specifications.

D. 1 SCOPE

According to clause 6.5 of the General Conditions of Contract (GCC) for construction works third edition (2015), certain work may be carried out using rates tendered in the daywork schedule. A schedule of personnel, plant and equipment which may be necessary to perform work on a day work basis is included in the schedule of quantities. The quantities used in the schedule are for tender evaluation purposes only and the use or not of these items shall not constitute a variation in terms of Clause 6.4 of the GCC.

No work will be paid for as Dayworks without the written instruction or approval of the Engineer.

D. 2 TYPE OF WORK

The Engineer may order daywork in certain cases where it is necessary to vary or to extend the works due to new or unforeseen circumstances to such an extent that the tendered rates for specific items of work are no longer applicable, or where no suitable combination of tendered rates can be used to pay for such work.

As a general rule, applicable rates for additional work items will be agreed between the Contractor and the Engineer. Dayworks will only be used in exceptional circumstances.

D. 3 MATERIALS

Materials for use in works carried out under Daywork shall be purchased by the Contractor who shall also arrange for delivery to site, and shall be responsible for any other requirements associated with specific materials. A Provisional Sum has been allowed in Dayworks Schedule for Daywork materials. The Contractor shall enter a tendered percentage in the schedule to cover his handling costs and profit, as per other provisional and prime cost sums in this Contract.

Materials shall be paid for using the method described in the Pricing Data. No contract price adjustment will be applicable to materials.

The Contractor shall submit proof of ownership for any materials used in Dayworks with his dayworks claim to the Engineer. Further, if specific materials are required for Dayworks, quotations will be called for as per Clause 6.5.2 of the GCC.

D. 4 CONSTRUCTION PLANT HIRE

Where daywork is ordered, the tendered rates for plant hire in Section 1800 of Schedule A shall be used in calculating the payment due for any plant required to execute the daywork. If no rate is included in the schedule for a particular piece of equipment, and where no other rate or combination of rates would provide suitable compensation, then the daywork method of payment described in Clause 6.5.1.3 of the GCC will be used.

The tendered rates for each item of constructional plant shall include for all operating costs associated with the said item of plant. Such costs are deemed to include fuel, re-fuelling costs, lubrication and routine servicing / maintenance, breakdowns and spares, all overhead costs, site management costs and administration costs. The tendered rates shall also include the plant operator and the general supervision of the plant while it is engaged in the dayworks.

D. 5 SALARIES AND WAGES OF WORKMEN

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The salaries and wages of workmen executing daywork shall be paid for using the tendered rates in Section 1800 of Schedule A . The tendered rates shall include for all costs associated with the employment of personnel, including salaries, wages, allowances, workmen's compensation, medical aid and pension contributions, government levies and taxes, training costs and any costs associated with living on the site. The tendered rates shall also include for the transportation of the workmen to the site of the dayworks.

All overhead costs, administration costs, site management costs and the Contractor's profit are deemed to be covered by the Dayworks rates and no additions or mark ups will be made to the tendered rates.

The tendered rates shall also include any hand tools normally associated with the workmen's job description e.g. picks, shovels, hammers, saws, spirit levels, etc. The tendered rate for labourers shall also include for the casual supervision by a gang boss or foreman. Only when specifically called for by the Engineer, will payment be made for the use of a gang boss or foreman supervising on a continuous basis.

D. 6 MEASUREMENT AND PAYMENT

The following principles shall also apply to the measurement and payment of Dayworks.

The unit of measurement for plant shall be the number of vibroclock hours worked and each item of plant shall be fitted with a vibroclock, the cost of which shall be included in the rates. Excessive non-productive time when the engine is idling will not be paid for. Where there is ambiguity between the flywheel horsepower and mass of the machine, the flywheel horsepower shall govern the measurement category. Where width and mass are specified, mass shall govern the measurement category.

The Contractor's attention is drawn to the requirements of Sub-clauses 6.5.3 and 6.5.4 of the GCC with regard to the submission of Dayworks claims.

PART E OHSA 1993 SAFETY SPECIFICATION

Generic occupational health and safety specification for construction work contracts

1 Scope

This health and safety specification in respect of a construction work contract:

- a) provides the overarching framework within which the contractor is required to demonstrate compliance with certain requirements for occupation health and safety established by the Occupational Health and Safety Act of 1993 during construction;
- b) establishes the manner in which the contractor is to manage the risk of health and safety incidents in during the construction; and
- c) establishes the manner in which the employer's health and safety agent will interact with the contractor.

Note 1 This specification establishes generic requirements to enable the employer and the contractor to satisfy aspects of the Occupational Health and Safety Act, 1993 (Act No. 85 of 1993) and the Construction Regulations, 2014. The contractor is required to develop, implement and maintain package specific health and safety plans. The employer is required to provide certain package specific information to the contractor or a health and safety specification for the works to enable such plans to be formulated. Accordingly, this generic specification on its own cannot ensure compliance with the requirements of the aforementioned Act (See Annexure A).

Note 2 The Construction Regulations, 2014, require an employer to stop any contractor from executing construction work which is not in accordance with the contractor's health and safety plan for the site or which poses to be a threat to the health and safety of persons.

Note 3 This specification establishes generic health and safety requirements. Site specific requirements for health and safety are stated in the scope of work associated with a contract (see Annexure A).

Note 4 The South African Council for the Project and Construction Management Professions has established the following specified categories of registration in terms of the Project and Construction Management Professions Act of 2000 (Act No. 48 of 2000):

- a) a Construction Health and Safety Agent who may be appointed by an employer to act as his agent in terms of the Occupational Health and Safety Act of 1993 and the Construction Regulations issued in terms of that Act;
- b) a Construction Health and Safety Manager who may be appointed by an employer to complement his professional team or by a contractor to manage company or project health and safety performance and compliance in accordance with the Occupational Health and Safety Act and Regulations; and
- c) a Construction Health and Safety Officers who may be appointed by an employer to mitigate the risk on a project or by a contractor to monitor and assist on-site health and safety performance and compliance in accordance with the Occupational Health and Safety Act and Regulations and services.

2 Definitions

Act: The Occupational Health and Safety Act, 1993 (Act No. 85 of 1993)

contractor: person or organization that contracts to provide the work covered by the contract

contract manager: person appointed by the employer to administer the contract on his behalf

competent person: any person who:

- a) has in respect of the work or task to be performed the required knowledge, training and experience and, where applicable, qualifications specific to that work or task; and

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b) is familiar with the Act and applicable regulations made in terms of the Act

Note: The Regulations stipulate that where appropriate qualifications and training are registered in terms of the provisions of the National Qualification Framework Act of 2000, those qualifications and training must be regarded as the required qualifications and training.

danger: anything which may cause injury or damage to persons or property

employer: person or organisation that enters into a contract with the contractor for the provision of the work covered by the contract

employer's health and safety agent: the person appointed as agent by the employer in terms of Regulation 4(5) of the Construction regulations and named in the contract data as the being the employer's agent responsible for health and safety matters

ergonomics: the application of scientific information concerning humans to the design of objects, systems and the environment for human use in order to optimise human well-being and overall system performance

hazard: a source of or exposure to danger

hazard identification: the identification and documenting of existing or expected hazards to the health and safety of persons, which are normally associated with the type of construction work being executed or to be executed

health and safety plan: a documented plan which addresses hazards identified and includes safe work procedures to mitigate, reduce or control the hazards identified

health and safety specification: a site, activity or project specific document pertaining to all health and safety requirements related to construction work which is included in the contractor's contract with the employer or an order issued in terms of framework agreement

healthy: free from illness or injury attributable to occupational causes

incident: an event or occurrence occurring at work or arising out of or in connection with the activities of persons at work, or in connection with the use of plant or machinery, in which, or in consequence of which:

- a) any person dies, becomes unconscious, suffers the loss of a limb or part of a limb or is otherwise injured or becomes ill to such a degree that he is likely either to die or to suffer a permanent physical defect or likely to be unable for a period of at least 14 days either to work or to continue with the activity for which he was employed or is usually employed;
- b) a major incident occurred; or
- c) the health or safety of any person was endangered and where:
 - i) a dangerous substance was spilled;
 - ii) the uncontrolled release of any substance under pressure took place;
 - iii) machinery or any part thereof fractured or failed resulting in flying, falling or uncontrolled moving objects; or machinery ran out of control

Inspector: a person designated as such under section 28 the Act

Major incident: an occurrence of catastrophic proportions, resulting from the use of plant or machinery, or from activities at a workplace

Reasonably practicable: practicable having regard to:

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- a) the severity and scope of the hazard or risk concerned;
- b) the state of knowledge reasonably available concerning that hazard or risk and of any means of removing or mitigating that hazard or risk;
- c) the availability and suitability of means to remove or mitigate that hazard or risk; and
- d) the cost of removing or mitigating that hazard or risk in relation to the benefits deriving therefrom;

Risk: the probability that injury or damage will occur

Safe: free from any hazard

Scaffold: any temporary elevated platform and supporting structure used for providing access to and supporting workmen or materials or both

Structure:

- a) any building, steel or reinforced concrete structure (not being a building), railway line or siding, bridge, waterworks, reservoir, pipe or pipeline, cable, sewer, sewage works, fixed vessels, road, drainage works, earthworks, dam, wall, mast, tower, tower crane, bulk mixing plant, pylon, surface and underground tanks, earth retaining structure or any structure designed to preserve or alter any natural feature, and any other similar structure;
- b) any false work, scaffold or other structure designed or used to provide support or means of access during construction work; or
- c) any fixed plant in respect of construction work which includes installation, commissioning, decommissioning or dismantling and where any construction work involves a risk of a person falling

Substance: any solid, liquid, vapour, gas or aerosol, or combination thereof

Suitable: capable of fulfilling or having fulfilled the intended function or fit for its intended purpose

Temporary works: any false work, formwork, support work, scaffold, shoring or other temporary structure designed to provide support or means of access during construction

Workplace: any premises or place where a person performs work in the course of his employment

3 Interpretation

3.1 The Act and its associated regulations shall have precedence in the interpretation of any ambiguity or inconsistency between it and this specification.

3.2 Compliance with the requirements of this specification does not necessarily result in compliance with the provisions of the Act.

4 Requirements

4.1 General requirement

The contractor shall:

- a) create and maintain as reasonably practicable a safe and healthy work environment,
- b) execute the work in a manner that complies with all the requirements of the Act and all its associated regulations, and in so doing, minimize the risk of incidents occurring;
- c) conspicuously display any site specific number assigned to the construction site in terms of
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the Construction Regulations 2014 at the main entrance to the site; and

- d) respond to the notices issued by the employer's health and safety agent as follows:
- 1) Improvement Notice: improve health and safety performance over time so that repeat notices are not issued;
 - 2) Contravention Notice: rectify contravention as soon as possible;
 - 3) Prohibition Notice: terminate affected activities with immediate effect and only recommence activities when it is safe to do so.

Note: Financial penalties can be applied should Contravention Notices be issued. This should be dealt with in the Contract Data.

4.2 Administration

4.2.1 Notification of intention to commence construction work

4.2.1.1 The contractor shall on sites where no construction work permit has been issued by the Provincial Director of the Department of Labour notify such director in writing using a form similar to that contained in Annexure 2 of the Construction Regulations issued in terms of the Act before construction work commences and retain proof of such notification in the health and safety file where the work includes:

- a) excavation work;
- b) working at height where there is a risk of falling;
- c) the demolition of a structure;
- d) the use of explosives; or
- e) a single storey dwelling for a client who is going to reside in such dwelling upon completion

4.2.1.2 The contractor shall ensure that no work commences on an electrical installation which requires a new supply or an increase in electricity supply before the person who supplies or contracts or agrees to supply electricity to that electrical installation has been notified of such work.

4.2.1.3 The contractor shall ensure that no asbestos work is carried out before the Provincial Director of the Department of Labour has been notified in writing.

4.2.2 Copy of the Act

The contractor shall ensure that a copy of the Act and relevant regulations is available on site for inspection by any person engaged in any activity on the site.

4.2.3 Good standing with the compensation fund or a licensed compensation insurer

The contractor shall before commencing with any work on the site provide the employer's health and safety representative with proof of good standing with the compensation fund or with a licensed compensation insurer.

4.2.4 Emergency procedures

4.2.4.1 The contractor shall submit for acceptance to the employer's health and safety agent an emergency procedure which include but are not limited to fire, spills, accidents to employees, exposure to hazardous substances, which:

- a) identifies the key personnel who are to be notified of any emergency;
- b) sets out details including contact particulars of available emergency services; and c) the actions or steps which are to be taken during an emergency.

4.2.4.2 The contractor shall within 24 hours of an emergency taking place notify the employer's SW. Scope of Work

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health and safety agent in writing of the emergency and briefly outline what happened and how it was dealt with.

4.2.5 Health and safety file

4.2.5.1 The contractor shall establish and maintain on site a health and safety file which contains copies, as relevant of:

- a) The following documents which shall be placed in the file prior to commencing with physical construction activities
 - 1) Copy of the contraction work permit issued in terms of the Construction Regulations 2014;
 - 2) the contractor's health and safety policy, signed by the chief executive officer, which outlines the contractor's objectives and how they will be achieved and implemented by the contractor;
 - 3) Copies of all risk assessments that were conducted
 - 4) The notification made to the Provincial Director of Labour, and if relevant, the notification of the person who supplies or contracts or agrees to supply electricity to that electrical installation;
 - 5) The letters of appointment, as relevant, together with a brief curriculum vita (CV) of:
 - the construction manager and any assistant construction managers;
 - the construction health and safety manager
 - the construction health and safety officer
 - the risk assessor who is tasked to perform the risk assessments; and
 - the registered person responsible for the electrical installation covered by the Electrical Installations Regulations;
 - the authorised persons responsible for gas appliances, gas system gas reticulation system covered by the Pressure Equipment Regulations;
 - 6) A copy of the certificate of registration of the registered person responsible for the electrical installation covered by the Electrical Installations Regulations;
 - 7) The approval of the design of the part of an electrical installation which has a voltage in excess of 1 kV by a person deemed competent in terms of the Electrical Installations Regulations;
 - 8) proof of registration of the electrical contractor who undertakes the electrical installation in terms of the Electrical Installations Regulations;
 - 9) the preliminary hazard identification undertaken by a competent person;
 - 10) The organogram which outlines the roles of the construction supervisor's assistants and safety officers; and
 - 11) The contractor's health and safety plan;
 - 12) The emergency procedures;
 - 13) The procedure for the issuing and replacement of lost, stolen, worn or damaged personal protective clothing and equipment; and
 - 14) Proof that the contractor and all the subcontractors are registered and in good standing with the compensation fund or with a licensed compensation insurer relevant to the type of work performed;
- b) The following documents, as relevant, which shall be placed in the file after construction activities have commenced
 - 1) the letters of appointments, if relevant, together with a brief curriculum vita (CV) of:

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- persons who are required to assist the construction supervisor;
 - construction supervisor for the site in respect of construction work covered by the Construction Regulations;
 - competent persons;
 - assistants of construction supervisor; and
 - designers of temporary works;
- 2) Any revisions to the organogram which outlines the roles of the construction supervisor's assistants and safety officers;
 - 3) Each and every subcontract agreement and each and every subcontractor's approved health and safety plan;
 - 4) Proof that every subcontractor is registered and in good standing with the compensation fund or with a licensed compensation insurer relevant to the type of work performed;
 - 5) Proof of all subcontractor's induction training whenever it is conducted;
 - 6) Copies of the minutes of the contractor's subcontractor's health and safety meetings;
 - 7) Copies of each of the contractor's subcontractors' health and safety policy, signed by the chief executive officer, which outlines the contractor's objectives and how they will be achieved and implemented by the contractor;
 - 8) The health and safety plans of all the contractor's subcontractors who are required to provide such plans;
 - 9) Copies of the fall protection plan and each revision thereof;
 - 10) A comprehensive and updated list of all the subcontractors employed on site by the contractor, indicating the type of work being performed by such sub-contractors;
 - 11) The outcomes of the monthly audits for compliance with the approved health and safety plan of each and every sub-contractor working on the site;
 - 12) Any report made to an inspector by the health and safety committee;
 - 13) The minutes of all health and safety meetings and any recommendations made to the contractor by the health and safety committee;
 - 14) The findings of all audit reports made regarding the implementation of the contractor's or a subcontractor's health and safety plan;
 - 15) The inputs of the safety officer, if any, into the health and safety plan;
 - 16) Details of induction training conducted whenever it is conducted including the list of attendees;
 - 17) Proof of the following where suspended platforms are used:
 - a certificate of system design issued by a professional engineer, professional certificated engineer or a professional engineering technologist;
 - proof of competency of erectors, operators and inspectors;
 - proof of compliance of operational design calculations with requirements of the system design certificate;
 - proof of performance test results;
 - sketches indicating the completed system with the operational loading capacity of the platform;
 - procedures for and records of inspections having been carried out;
 - procedures for and records of maintenance work having been carried out;

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- proof that the prescribed documentation has been forwarded to the provincial director;
- 18) Letters of appointments for competent persons to supervise the activities which law requires to be so supervised;
- 19) A copy of risk assessments made by competent persons;
- 20) Records of the register of inspections made by a competent person immediately before and during the placement of concrete or any other load on formwork;
- 21) The names of the first aiders on site and copies of the first aid certificates of competency;
- 22) The names of the persons who are in possession of valid certificate of competency in first aid and copies of such certificates;
- 23) Medical certificates of fitness for the contractor's and subcontractors' employees specific to the construction work to be performed and issued by an occupational health and safety practitioner;
- 24) Details of all incidents together with the Contractor's investigative report on such incident;
- 25) The record of inspections carried out by the designers of structures to ensure compliance with designs; and
- 26) any other documentation required in terms of regulations issued in terms of the Act including a record of all drawings, designs, materials used and other similar information concerning the completed structure;

4.2.5.2 The health and safety file shall be made available for inspection by any inspector, subcontractor, the contract manager, the employer's health and safety agent or employee of the contractor upon the request of such persons.

4.2.5.3 The health and safety file shall be updated to ensure that its contents always reflect the latest available information.

4.2.5.4 The contractor shall hand over a copy of the health and safety file to the employer's health and safety agent upon completion of the contract and if relevant, a certificate of compliance accompanied by a test report for the electrical installation in accordance with the provisions of the Electrical Installation Regulations.

4.2.6 Health and safety committee

4.2.6.1 The contractor shall convene health and safety meetings whenever more than two health and safety representatives have been appointed for the site. These meetings shall be attended by all health and safety representatives and persons nominated by the contractor. Such meetings shall be convened whenever necessary but at least once every month to:

- a) Make recommendations to the contractor regarding any matter affecting the health or safety of persons on the site; and
- b) Discuss any incident on the site in which or in consequence of which any person was injured, became ill or died.

4.2.6.2 The contractor shall consult with the health and safety committee on the development, monitoring and review of the risk assessment.

4.2.6.3 The contractor shall ensure that minutes of the health and safety committee meetings are kept.

The employer's health and safety agent shall be invited to attend such meetings as an observer.

4.2.7 Inspections, formal enquires and incidents

4.2.7.1 The contractor shall inform the relevant safety representative:

- a) Beforehand of inspections, investigations or formal inquiries of which he has been notified by an inspector; and
- b) as soon as reasonably practicable of the occurrence of an incident on the site.

4.2.7.2 The contractor shall record all incidents and notify the employer's health and safety agent of any incident, except in the case of a traffic accident on a public road, as soon as possible after it has occurred and report such incidence to an inspector of the department of labour and notify the Provincial Director of the Department of Labour of such incident within 7 days on the prescribed form

4.2.7.3 The contractor shall investigate all incidents and issue the employer's health and safety agent with copies of such investigations.

4.2.7.4 The contractor shall in the event of an incident in which a person dies, or is injured to such an extent that he is likely to die, or suffered the loss of a limb or part of a limb:

- a) Notify the Provincial Director of the Department of Labour of such incident by telephone, facsimile or similar means of communication;
- b) Ensure that no person disturbs the site at which the incident occurred or remove any article or substance involved in the incident therefrom, without the consent of an inspector, unless an action is necessary to prevent a further incident, to remove the injured or dead, or to rescue persons from danger; and.
- c) Provide the Provincial Director of the Department of Labour with a report which includes the measures that the contractor or his subcontractor intend to implement to ensure a safe site as reasonably practicable.

4.2.7.5 The contractor shall notify the Provincial Director of the Department of Labour of the death of any person which results from injuries sustained in an incident.

4.2.8 Personal protective equipment and clothing

The contractor shall ensure that:

- a) All workers are issued with the necessary personal protective clothing;
- b) All workers are identifiable at all times by having the company for which they work for printed on the back or front of their overalls; and
- c) Clear procedures are in place for the replacement of lost, stolen, worn or damage personal protective clothing.

4.3 Appointments

4.3.1 Construction manager

The contractor shall appoint in writing one full time competent person as the construction manager with the duty of managing all the construction on a single site including that of ensuring occupational health and safety compliance. Where appropriate, the contractor shall appoint in writing one or more assistant construction managers.

4.3.2 Appointment of construction health and safety officers

The contractor shall after consultation with the employer after considering the size of the project, the degree of danger likely to be encountered or the accumulation of hazards or risks on the site, prior to commencing the work and if necessary, appoint a full-time or a part-time suitably qualified health and

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safety officer to assist in the control of all health and safety related aspects on the site.

4.3.3 Construction supervisors

4.3.3.1 The construction manager shall in writing appoint construction supervisors responsible for construction activities and ensuring occupational health and safety compliance on the construction site.

4.3.3.2 A contractor shall after considering the size of the project and if considered necessary, appoint in writing one or more competent employees for different sections of the work to assist the construction supervisor.

4.3.4 Competent persons

4.3.4.1 The contractor shall appoint in writing competent persons to supervise or inspect, as relevant, any of the following:

- a) Formwork and support work operations;
- b) Excavation work;
- c) Demolition work;
- d) Scaffolding work operations;
- e) Suspended platform work operations;
- f) Material hoists;
- g) bulk mixing plants;
- h) temporary electrical installations;
- i) the stacking and storage of articles on the site; and
- j) fire equipment.

4.3.4.2 The contractor shall appoint in writing competent persons to:

- a) Induct employees in health and safety; and
- b) Prepare and update as necessary a fall protection plan and to provide the construction manager with a copy of the latest version of such plan.

4.3.5 Health and safety representatives

4.3.5.1 The contractor shall appoint in writing one health and safety representative for every 50 employees working on the site, whenever there are more than 20 employees on the site, to:

- a) Review the effectiveness of health and safety measures;
- b) Identify potential hazards and potential major incidents;
- c) In collaboration with his employer, examine the causes of incidents;
- d) Investigate complaints by any employee of the contractor relating to that employee's health or safety on the site;
- e) Make representations to the contractor on matters arising from a), b), c) or d) or on general matters affecting the health or safety of the employees at the workplace;

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- g) Inspect the site with a view to, the health and safety of employees, at regular intervals;
- h) Participate in consultations with inspectors at the workplace and accompany inspectors on inspections of the workplace; and
- i) Participate in any internal health or safety audit.

4.3.5.2 The contractor shall provide the health and safety representatives with the necessary assistance, facilities and training to carry out the functions established in 4.3.1

4.4 Employer's health and safety agent

4.4.1 The employer's health and safety agent shall:

- a) audit the contractor's compliance with the requirements of this specification prior to the commencement of any physical construction activities on the site;
- b) accept or reject the contractor's health and safety plans, giving reasons for rejecting such plans;
- c) monitor the effective implementation of all safety plans;
- d) conduct periodic and random audits on the health and safety file to establish compliance with the requirements of this specification;
- e) visit the site at regular intervals to conduct site inspections, and based upon such visits issue, wherever necessary, Improvement Notices, Contravention Notices and Prohibition Notices, to the contractor or any of the contractor's subcontractors with a copy to the contract manager and, where relevant, to the contractor.

4.4.2 The contractor shall invite the employer's health and safety agent to audit compliance with the requirements of this specification before commencing with any physical construction activity on the site.

4.5 Creating and maintaining a safe and healthy work environment

4.5.1 General

4.5.1.1 The contractor shall with respect to the site and the construction work that are contemplated:

- a) cause a preliminary hazard identification to be performed by a competent person before commencing any physical construction activity;
- b) evaluate the risks associated with the identified hazard to the health and safety of such employees and the steps that need to be taken to comply with the Act; and
- c) as far as is reasonably practicable, prevent the exposure of such employees to the hazards concerned or, where prevention is not reasonably practicable, minimize such exposure.

4.5.1.2 The contractor shall ensure that:

- a) all reasonably practicable steps are taken to prevent the uncontrolled collapse of any new or existing structure or any part thereof, which may become unstable or is in a temporary state of weakness or instability due to the carrying out of construction work;

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- b) no structure or part of a structure is loaded in a manner which would render it unsafe; and
- c) account of information, if any, provided by the designer of the structure is taken into account in the risk assessment;

Note: The information provided by the designer should outline known or anticipated dangers or hazards relating to the work and make available all information required for the safe execution of the work. It should provide as relevant, geotechnical information (or make reference to reports provided in the site information), the loading the structure is designed to withstand, the methods and sequence of construction.

4.5.1.3 The contractor shall carry out regular inspections and audits to ensure that the work is being performed in accordance with the requirements of this specification.

4.5.2 Risk assessment

4.5.2.1 The contractor shall before the commencement of any work on site and during construction work, cause a risk assessment to be performed by a competent person appointed in writing. Such an assessment shall as a minimum:

- a) identify hazards to which persons may be exposed to;
- b) analyse and evaluate the identified risks associated with the identified hazards;
- c) document a plan of safe work procedures, including the use of any personal protective equipment or clothing and the undertaking of periodic "toolbox talks" or inductions before undertaking hazardous work, to mitigate, reduce or control the risks and hazards that have been identified;
- d) provide a monitoring plan; and
- e) provide a review plan.

Note: A risk assessment is an important step in protecting workers as well as complying with the law. It helps to focus on the risks that really matter in a particular workplace – the ones with the potential to cause real harm. Workers and others have a right to be protected from harm caused by a failure to take reasonable control measures. The following four steps are suggested:

- 1) Identify the hazards by looking at what could reasonably be expected to cause harm, ask employees or their representatives what they think, obtain advice from trade associations or publications on health and safety, check manufacturer's instructions or data sheets for chemicals and equipment as they can be very helpful in spelling out the hazards and putting them in their true perspective, review accident and ill-health records, think about long-term hazards to health (eg high levels of noise or exposure to harmful substances) as well as safety hazards etc.
- 2) Identify who may be harmed and how by identifying how individuals and groups of people might be harmed i.e. what type of injury or ill health might occur.
- 3) Evaluate the risks and decide on precautions by doing everything 'reasonably practicable' to protect people from harm i.e. by looking at how things are done, what controls are in place and how the work is organised and comparing this against good practice to see if more can be done to bring practices up to standard. Consider if the hazard can be removed all together, and if not how can the risks be controlled so that harm is unlikely, e.g. try a less risky option (e.g. switch to using a less hazardous chemical); prevent access to the hazard (e.g. by guarding); organise work to reduce exposure to the hazard (e.g. put barriers between

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pedestrians and traffic); issue personal protective equipment (e.g. clothing, footwear, goggles etc.); and provide welfare facilities (e.g. first aid and washing facilities for removal of contamination).

- 4) Record the findings by writing down the findings of the risk assessment.

4.5.2.2 The contractor shall ensure that as far as is reasonably practicable, ergonomic related hazards are analysed, evaluated and addressed in the risk assessment.

4.5.2.3 Notwithstanding the provisions of the fall protection plan, the contractor shall ensure that:

- a) all unprotected openings in floors, edges, slabs, hatchways and stairways are adequately guarded, fenced or barricaded or that similar means are used to safeguard any person from falling through such openings;
- b) no person works in an elevated position, unless such work is performed safely as if working from a scaffold or ladder;
- c) notices are conspicuously placed at all openings where the possibility exists that a person might fall through such openings;
- d) fall prevention and fall arrest equipment is:
 - suitable and of sufficient strength for the purpose or purposes for which it is being used having regard to the work being carried out and the load, including any person, it is intended to bear; and
 - securely attached to a structure or plant and the structure or plant and the means of attachment thereto is suitable and of sufficient strength and stability for the purpose of safely supporting the equipment and any person who is liable to fall;
- e) fall arrest equipment is only used where it is not reasonably practicable to use fall prevention equipment; and
- f) suitable and sufficient steps are taken to ensure, as far as is reasonably practicable, that in the event of a fall by any person, the fall arrest equipment or the surrounding environment does not cause injury to the person.

4.5.2.4 Where roof work is being performed on a construction site, the contractor shall ensure that it is indicated in the fall protection plan that:

- a) the roof work has been properly planned;
- b) the roof erectors are competent to carry out the work;
- c) no employees are permitted to work on roofs during inclement weather conditions or if weather conditions are a hazard to the health and safety of the employees;
- d) prominent warning notices are to be placed where all covers to openings are not of sufficient strength to withstand any imposed loads and where fragile material exists;
- e) the areas mentioned in paragraph (d) are to be suitably barricaded off to prevent persons from entering;
- f) suitable and sufficient platforms, coverings or other similar means of support have been provided to be used in such a way that the weight of any person passing across or working on or from fragile material is supported; and
- g) there is suitable and sufficient guard-rails or barriers and toe-boards or other similar

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means of protection to prevent, so far as is reasonably practicable, the fall of any person, material or equipment.

4.5.3 Health and safety plans

4.5.3.1 The contractor shall prior to commencing the work to which this specification applies, submit to the employer’s health and safety agent for approval a suitable and sufficiently documented health and safety plan, based on this specification, the health and safety specification and the risk assessment that is conducted.

4.5.3.2 The health and safety plan shall as a minimum provide:

- a) the information contained in Table 1 in respect of each of the hazards associated with work falling within the scope of the contract); and
- b) an outline of the manner in which the contractor intends complying with the requirements of this specification.

Table 1: Example of the format of a health and safety plan

What are the hazards relating to work tasks?	Who might be harmed and how?	What are the safe work procedures for the site?	What further action is necessary (monitoring and review)?	Action by whom	Action by when

4.5.3.3 The contractor shall discuss the submitted health and safety plan with the employer’s health and safety agent, modify such plan in the light of the discussions and resubmit the modified plan for approval.

4.5.3.4 The contractor shall apply the approved health and safety plan from the date of its commencement and for the duration of the work to which this specification applies.

4.5.3.5 The contractor shall conduct periodic audits for compliance with the approved health and safety plan at intervals agreed upon with the employer’s health and safety agent, but at least once every month.

4.5.3.6 The contractor shall review and update the health and safety plan whenever changes to the works are brought about or following the occurrence on an incident.

4.5.4 Responsibilities towards employees and visitors

4.5.4.1 The contractor shall as far as is reasonably practicable, cause every employee to be made conversant with the hazards to his health and safety attached to any work which he has to perform, any article or substance which he has to produce, process, use, handle, store or transport and any plant or machinery which he is required or permitted to use, as well as with the precautionary measures which should be taken and observed with respect to those hazards or safe work procedures.

4.5.4.2 The contractor shall ensure that all employees under his or her control and the employees of his subcontractors who are performing construction work are:

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- a) informed, instructed and trained by a competent person regarding any hazard and the related work procedures before any work commences, and thereafter at such times as may be determined in the risk assessment; and
- b) issued with proof of health and safety induction training issued by a competent person and carry proof of such induction when working on site.

4.5.4.3 The contractor shall cause a record of training to be kept which indicates the training dates, the names, identity numbers and job description of all those who attended such training and the name, identity number and competence of the person who provided the training.

4.5.4.4 The contractor shall not allow or permit any employee to enter the site, unless such person has undergone health and safety induction training pertaining to the hazards prevalent on the site at the time of entry.

4.5.4.5 The contractor shall ensure that each visitor to a construction site, save where such visitor only visits the site office and is not in direct contact with the construction work activities:

- a) undergoes health and safety instruction pertaining to the hazards prevalent on the site; and b) is provided with the necessary personal protective equipment.

4.5.4.6 The contractor shall provide suitable on-site signage to alert workers and visitors to health and safety requirements. Such signage shall include but not be limited to:

- a) unauthorized entrance prohibited;
- b) signage to indicate what personal protective equipment is to be worn; and c) activity

related signs.

4.5.4.7 The contractor shall not permit any person who is or who appears to be under the influence of intoxicating liquor or drugs, to enter or remain at a workplace.

4.5.5 Subcontractors

4.5.5.1 The contractor may only subcontract work in terms of a written subcontract and shall only appoint a subcontractor should he be reasonably satisfied that such a subcontractor has the necessary competencies and resources to safely perform the work falling within the scope of the contract. Such a subcontract shall require that the subcontractor:

- a) co-operate with the contractor as far as is necessary to enable both the contractor and sub-contractor to comply with the provisions of the Act; and
- e) as far as is reasonably practicable, promptly provide the contractor with any information which might affect the health and safety of any person at work carrying out work or any person who might be affected by the work of such a person at work or which might justify a review of the health and safety plan.

4.5.5.2 The contractor shall provide any sub-contractor who is submitting a tender or appointed to perform a sub-contract falling within the scope of the contract, with the relevant sections of this specification and the health and safety specification.

4.5.5.3 The contractor shall discuss and negotiate with each subcontractor performing construction work the subcontractor's health and safety plan and approve that plan for implementation.

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4.5.5.4 The contractor shall take reasonable steps as are necessary to ensure that:

- a) potential contractors submitting tenders have made sufficient provision for health and safety measures during the construction process;
- b) each subcontractor is registered and in good standing with the compensation fund or with a licensed compensation insurer prior to their performance of work on site;
- c) all the subcontractor's employees have a valid medical certificate of fitness specific to the construction work which are to be performed which is issued by an occupational health and safety practitioner;
- d) all sub-contractors co-operate with each other to enable each of those sub-contractors to comply with the requirements of the Act and associated regulations;
- e) each subcontractor performing construction work has and maintains a health and safety file containing the relevant information described in 4.2.5; and
- f) each sub-contractor's health and safety plan is implemented and maintained.

4.5.5.5 The contractor shall conduct periodic document verifications and audits for compliance with the approved health and safety plan of each and every sub-contractor working on the site at intervals agreed upon with such subcontractors, but at least once per month.

4.5.5.6 The contractor shall stop any subcontractor from executing construction work which is not in accordance with the contractor's or subcontractor's health and safety plan for the site or which poses a threat to the health and safety of persons.

4.5.5.7 The contractor shall ensure that where changes to the works occur including design changes, sufficient health and safety information and appropriate resources are made available to subcontractor to execute the work safely.

4.5.5.8 The contractor shall ensure that:

- a) every subcontractor is registered and in good standing with the compensation fund or with a licensed compensation insurer prior to work commencing on site;
- b) potential subcontractors submitting tenders have made provision for the cost of health and safety measures during the construction process; and
- c) every subcontractor has in place a documented health and safety plan prior to commencing any work on site which falls within the scope of the contract.

4.5.5.9 The contractor shall receive, discuss and approve health and safety plans submitted by subcontractors.

4.5.5.10 The contractor shall ensure that all subcontractors are informed regarding any hazard as stipulated in the risk assessment before any work commences, and thereafter at such times as may be determined in the risk assessment.

4.5.5.11 The contractor shall reasonably satisfy himself that all employees of subcontractors are informed, instructed and trained by a competent person regarding any hazard and the related work procedures before any work commences, and thereafter at such times as may be determined in the risk assessment.

4.5.5.12 The contractor shall satisfy himself and ensure that all subcontractor employees deployed in the site are:

- a) informed, instructed and trained by a competent person regarding any hazard and the related work procedures before any work commences, and thereafter at such times as may be determined in the risk assessment; and

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- b) issued with proof of health and safety induction training issued by a competent person and carry proof such induction when working on site.

4.5.5.13 The contractor shall undertake a risk assessment together with subcontractors whenever subcontractors are working in close proximity to other subcontractors particularly activities involve excavations, the moving of earth, the movement of heavy machinery and working at heights.

4.5.6 First aid, emergency equipment and procedures

4.5.6.1 The contractor shall where more than five employees are employed at a workplace, provide a first aid box or boxes at or near the workplace which shall be available and accessible for the treatment of injured persons at that workplace. Such first aid boxes shall contain suitable first aid equipment which includes the items listed in the General Safety Regulations issued in terms of the Act.

4.5.6.2 The contractor shall ensure that where there are more than 10 employees employed on the site that for every group of up to 50 employees at that workplace, at least one person is readily available during normal working hours, who is in possession of a valid certificate of competency in first aid.

4.5.7 Facilities for workers

4.5.7.1 The contractor shall provide and keep clean and fit for use at or within reasonable access of the site:

- a) at least one shower facility for every 15 workers;
- b) at least one sanitary facility for every 30 workers;
- c) changing facilities for each gender; and
- d) sheltered eating areas.

4.5.7.2 A contractor shall provide reasonable and suitable living accommodation for the workers at construction sites which are remote from their homes and where adequate transportation between the site and their homes, or other suitable living accommodation, is not available.

4.6 Design of temporary work

The contractor shall:

- a) provide the health and safety agent with the names and contract particulars of the designers involved in the design of temporary works;
- b) issue the designers with a copy of the health and safety specification as well as any pertinent information contained in the contract; and
- c) provide the health and safety agent with certificates issued by the designer of the temporary works that such works are fit for purpose before such works are used in support construction activities.

PART F: SMALL CONTRACTOR DEVELOPMENT, TRAINING AND COMMUNITY LIAISON

D1001 SCOPE

This section covers construction aspects relating to the processes by which the construction industry develops emerging and established small contractors, preferably from the Target Area. It also deals with labour enhanced construction by encouraging the engagement and training of labour recruited from local communities.

D1002 DEFINITIONS AND APPLICABLE LEGISLATION

(a) Definitions

Unless inconsistent with the context, in these specifications, the following terms, words or expressions shall have the meanings hereby assigned to them:

Contract Participation

Contract Participation is a process by which the Employer implements Government's objectives by setting targets relating to small contractor development and labour enhancement which the Contractor shall achieve as a minimum.

Labour

Labour is the Contractor's and Subcontractor's personnel whose monthly earnings are derived from hours worked for a fixed hourly rate which is adjusted from time to time by legislation (as a statutory minimum) and the Contractor's and Subcontractor's employment policies.

Target Area

Target Area is a defined area from which the Contractor is expected to recruit Targeted Labour. The Target Area for this contract is as indicated in the Appendix to Tender.

Targeted Enterprise

An enterprise which:

- is a contractor registered with the Construction Industry Development Board in a contractor grading designation from 2 to 7 and status as potentially emerging; and
- the Contractor has no equity holding in; and
- is a sub-contractor who undertakes work within its registered CIDB category; and
- is registered in terms of the Company's Act, 2008 (Act No. 71 of 2008) or Close Corporation Act, 1984 (Act No. 69 of 1984); and
- is registered with the South African Revenue Service.

Target Groups

A Target Group is a specific section of the population who are South African citizens or have the legal right to work in South Africa and who are distinguished by gender, age or disability.

Targeted Labour

Targeted Labour is Labour recruited from the Target Area, who permanently reside in the Target Area or who are recognized as being residents of the Target Area on the basis of identification and association with and recognition by the residents of the Target Area.

(b) Applicable Legislation

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The following Acts, as amended from time to time, are predominant amongst those which apply to the construction industry and are listed here for reference purposes only:

The Constitution of South Africa;
Public Finance Management Act No. 1 of 1999;
Preferential Procurement Policy Framework Act No. 5 of 2000;
Construction Industry Development Board Act No. 38 of 2000;
Broad-Based Black Economic Empowerment Act No. 53 of 2003.

D1003 COMMUNITY liaison

“The purpose of community liaison is to create awareness between the Contractor and communities through which the contract passes. There is no need on this contract to create a project liaison committee (PLC), although it may be advisable that a community relations officer (CRO) is appointed from the Contractor’s ranks, for the specific purpose of acting as liaison between management and hired labour.”

(a) Purpose

In order to give effect to the need for transparency in the process of delivering services, the contractor should liaise with the community throughout the life cycle of the contract. This may be achieved through structured engagement between those responsible for the delivery of the contract and the communities adjacent to the contract.

(b) Structure and composition

A public liaison committee (PLC) or Public steering committee (PSC) may be established as a communication structure that interacts with all parties involved with the contract. The composition of the PLC comprises representation by the Employer, the Contractor, the engineer and formal structures within the communities. The Contractor is advised to make use of established community communication channels and appoint from among his site personnel a responsible person, (community relations officer (CRO)), to participate in the PLC business. Should the locality and size of the contract warrant the need for a project liaison officer (PLO) such appointment will be made by the engineer as part of the engineer’s staff.

(c) Use of the PLC or PSC

The Contractor is encouraged to utilise the community liaison process in order to facilitate harmonious relationships on the contract. Some of the suggested elements of construction activity that should be discussed by the PLC are,

- Targeted Enterprises with whom the Contractor is already contractually committed prior to the commencement of the contract,
- Assist the contractor with the recruitment of Targeted Labour,
- Assistance with general community/project liaison,
- The need for training.

(d) Use of the PLO

The purpose of the PLO is to facilitate liaison between the community, community structures, local authorities, the contractor and the engineer. The engineer and contractor shall, at the start of the contract, agree on the duties of the PLO which may include the following:
communicating the labour requirements with regards to numbers and skills to the community;
determining, in consultation with the contractor, the needs of the labour for training;
identifying possible labour disputes and to assist in their resolution;
informing labour of their conditions of temporary employment and to inform labourers as soon as possible when their period of employment will be terminated;
attending disciplinary proceedings to ensure that hearings are fair and reasonable;
attending meetings in which the community and/or labour is present or is required to be represented;

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In terms of the Conditions of Contract, all labour recruitment, employment and associated risks shall remain the sole responsibility of the contractor.

D1004 TRAINING

(a) Purpose of training

The Employer has no service agreement or memorandum of understanding with any education and training quality assurance body and, therefore, does not function as the employer as defined under any three-party-agreement between the learner, the training provider and the employer. But the Employer desires similar outcomes to such agreements; specifically to train Targeted Enterprises and Targeted Labour and equip them with residual skills that can be used to gain meaningful future employment and qualifications that permit continued access to further learning and qualifications within a defined programme.

The Employer will facilitate training and in this capacity demands continuous involvement in the necessary decision making and quality control process of the anticipated training within a skills program which identifies multiple but connected and full learnerships.

The training shall be at both a theoretical and practical level and in accordance with the various laws and regulations contained in the South African Qualification Authority (SAQA) statutes.

Wherever in this section reference is made to the selection and training of learners, any person, employed by any national, provincial or local authority, being it full time or part time, is expressly excluded from being considered for this training.

The complete training programme shall be approved by the engineer before training can commence.

(b) Skills analysis

Before any training programmes can be approved the contractor shall complete a skills audit of his own employees and those of his subcontractors to determine existing qualifications and education received. The outcome of the analysis shall be used to create a training programme that will benefit both the employee and the construction industry at large.

A separate skills analysis shall be conducted for the Targeted Enterprises with the specific purpose of identifying programmes that will develop and improve the ability of the owners of those enterprises to better manage their companies.

The skills analyses and subsequent training programmes must be provided by a suitably qualified training practitioner (the training manager) whose services the contractor shall procure.

(c) The training provider

The training manager shall be the training provider in terms of his obligations and commitment to undertake the training required. In the event that the training manager does not himself have the requisite training qualifications he may include as part of his management team a person who does. Such person may be an institution/organisation, company, collaborative partnership or consultancy in which case, whoever is approved from that entity shall be dedicated to provide all training once the programme has been approved by the engineer.

The training provider must be accredited and have in its employ Practitioners and/or Assessors registered with the Construction Education Training Authority (CETA) and who must have the necessary certified proof. Accreditation and registration proof shall be current, valid and list the NQF levels and unit standards for which he/she is accredited.

The training and competency levels required of the training provider are given in the table below:

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TABLE D1005/1: QUALIFICATIONS FOR TRAINING PERSONNEL

Designation	Title & Unit Standard No	NQF Level	Credit
Practitioner	Train the trainer; No 7384	4	16
Assessor	Conduct outcome base assessment; No 115753	5	15
Moderator	Conduct moderation of outcome based assessment; No 115759	6	10

In addition to the above qualifications, and in keeping with current CETA practical experience requirements for registration as a trainer, NQF level 4 training courses shall only be provided by a practitioner/assessor with NQF Level 5 (one level up) credentials. For this project the Employer requires the further qualification that assessors/moderators means persons who have been employed for at least 5 years as a site agent managing construction processes in the specific fields of roads maintenance, roads new construction, roads rehabilitation, structures, etc.

It may be appropriate and effective to have different calibre/experienced personnel for each of the fundamental, core and elective training and assessment elements. In other words because the elective unit standards are more vocationally orientated and require specialist input, it is not expected that a single trainer/assessor will have all the necessary skills. In such cases, the training provider shall acquire an appropriate Practitioner/Assessor to perform elective training duties. Such appointments shall be approved by the Employer.

(d) Training

(i) Skills programme

Recognised Prior Learning of each employee shall be investigated, and taken into account and incorporated into each skills programme along with the additional competencies identified as being capable of providing a full learnership outcome.

It is recognised that the programme may consist of several unit standards but totalling insufficient credits for a full learnership qualification. Nevertheless, the competencies and credits achieved in a skills program should contribute to a full learnership by a later acquisition of the outstanding Unit Standards required for the full learnership.

The skills programme must also be geared in such a way that a selected number of applicable and urgently required unit standards will equip a learner with the minimum skills to become economically involved in the execution of the works as soon as possible.

Studying for any learnership requires minimum literacy and numeracy competencies as defined by SAQA. The actual literacy and numeracy levels inform the training provider on how to conduct the selection process. Learners with grade 12 literacy, numeracy and computer skills will, in most cases, comply with the minimum learning necessities. However, a baseline assessment (for example by conducting mini RPL enquiries and tests) may be required to ensure that the competency levels still exist. Some fill-in skills programme of fundamental unit standards may be needed.

Learners identified as having already acquired some tertiary training, particularly in the field of civil engineering, may be better suited to a more specialised learner programme. In other words the skills programme must reflect a degree of flexibility to cater for the different levels of competencies the selected learners will have and a single programme suitable for all learners should not be considered.

All training shall take place within normal working hours, or as agreed with the trainees.

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(ii) Targeted learnerships

The essential SAQA learnership criteria that must be applied by the training provider are given below for the sake of providing sufficient detail for the contractor to understand the Employer's requirements:

- minimum credits for qualification;
- fundamental unit standards and credit values;
- core unit standards and credit values;
- elective units standards and credit values;
- assumption that NQF level 3 language, computer and mathematical competencies exist;
- RPL processes;
- exit level outcomes;

Notwithstanding the appearance of the above criteria in the contract document, they are not exhaustive and the training provider must apply the systems and processes provided by the relevant SAQA and other related legislation pertinent to training. The training provider shall constantly consult the SAQA website (www.saqa.org.za) page to ensure that the most current unit standard is used. In the event of any conflict, the legislated requirements shall apply.

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 in the learnership programme.

When considering learnerships and skills programmes the training provider shall distinguish between levels of learning required. NQF level 5 training is not anticipated but may be applicable for some members of existing small contractors' staff. The main training focuses on NQF levels 4 and 3. The former level is for the qualification title National Certificate: Supervision of Construction Processes, and is the prerequisite qualification for NQF level 5, National Diploma: Management of Civil Engineering Construction Processes. The NQF level 3 qualification title is National Certificate: Construction Roadworks.

It may be necessary to include additional core unit standards (e.g. "tendering" as an additional unit standard for NQF level 4) in order to achieve project development objectives and identification of any additional unit standards shall be discussed with the engineer and cannot be implemented without prior approval.

(iii) Learning material

Learning material is required for each unit standard. This learning material is like prescribed books for other qualifications. It is a requirement for all the learners to receive a copy, to learn the contents, and also to serve as a reference source after qualification.

The SAQA unit standards define the content of the learning material. The learning material must not only comply with the SAQA and CETA guidelines but must, and most importantly, be technically and practically aligned to road construction or road maintenance. Any input from a subject matter expert required to ensure the appropriateness of a particular unit standard subject is to be included in the training provider's costs.

The requirements to be addressed in learning material as outlined by the SAQA unit standard are, amongst others, the following:

- The purpose of the unit standard;
- Each of the specific outcomes (normally 4 per unit standard);
- Each of the assessment criteria (normally 4 per specific outcome);
- The range as is defined for each specific outcome;
- The critical cross-field outcomes for the unit standard;
- The unit standard essential embedded knowledge.

(iv) Student experiential training

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The Employer may provide students to the contractor to provide experiential training. The contractor is required to provide experiential training to the university or university of technology undergraduate students in accordance with the academic institution requirements.

The contractor shall also provide the students with all the tools (including appropriate information technology hardware and software) and space necessary to carry out engineering work as if they were the contractor's own permanent staff

Reporting on training progress of each student shall be compiled according to the formats and intervals set by the relevant academic institution.

(e) Training facilities

The Contractor shall be responsible for the provision of everything necessary for the delivery of the various training workshops and modules including:

A suitable venue with sufficient furniture, lighting and power

All necessary stationery consumables and study material

Transport for attendants

Before commencing with any structured training the Contractor shall submit his intended programme to the engineer for approval of its subject content and proposed trainers, and the Contractor shall, if so instructed by the engineer, alter or amend the programme and/or course content.

(f) Generic skills training

Generic skills shall be taught where the need for these has been identified as being necessary.

In this regard the contractor shall make representation to the engineer, who shall approve candidates that should attend such courses as thought appropriate. Those selected shall receive formal generic skills training in a programmed and progressive manner. The PLC and/or the engineer may also identify a need for generic skills training.

Typical training programmes could comprise some or all of the following modules:

- Basic hygiene and HIV/AIDS awareness
- Road safety
- Basic management of the environment
- Tourism awareness and opportunities
- Managing personal finance

(g) Keeping of records

The training provider shall keep comprehensive records of the training given to each trainee and ensure that trainees' successful completion of successive unit standards are entered onto the national database. With successful completion of generic skills courses each trainee shall be issued with a certificate indicating the course contents as proof of attendance and completion. The contractor shall keep a register of certificates issued in this regard. Whenever required, the contractor shall provide copies of such records to the engineer.

D1005 LABOUR ENHANCED CONSTRUCTION

The Contractor's attention is drawn to the fact that it is an objective of the contract to maximise the labour content of certain operations or portions thereof. In this regard, where the specified work allows for a choice between mechanical or labour-enhanced means, the former should generally be kept to the practical minimum.

Before commencing with any labour enhanced operations the Contractor shall discuss his intentions with the engineer, and shall submit to the engineer on a monthly basis, daily labour returns indicating the numbers of temporary personnel employed on the works and the activities on which they were engaged.