

# **MKHONDO LOCAL MUNICIPALITY**

## **SCOPE OF WORK**

REFERENCE NO.: **MKHO03/2023/24(12)**

**RE-GRAVELLING AND STORMWATER MANAGEMENT FOR 1900M X 5M ROAD AT WARD 13  
MANGOSUTHU**

## **PART C3- PROJECT SCOPE**

**Prepared for:**

CLIENT

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REFERENCE NO.: **MKHO03/2023/24(12)**

**RE-GRAVELLING AND STORMWATER MANAGEMENT FOR 1900M X 5M ROAD AT WARD  
13 MANGOSUTHU**

**MKHONDO LOCAL MUNICIPALITY**

**RE-GRAVELLING AND STORMWATER MANAGEMENT FOR 1900M X 5M ROAD AT WARD 13  
MANGOSUTHU**

**PART C3: SCOPE OF WORKS**

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## **MKHONDO LOCAL MUNICIPALITY**

### **RE-GRAVELLING AND STORMWATER MANAGEMENT FOR 1900M X 5M ROAD AT WARD 13 MANGOSUTHU**

#### **C3.1 STANDARD SPECIFICATIONS**

The standard specifications on which this contract is based are the COLTO Standard Specifications for Road and Bridge Works for State Road Authorities 1998 edition.

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.

## **MKHONDO LOCAL MUNICIPALITY**

### **RE-GRAVELLING AND STORMWATER MANAGEMENT FOR 1900M X 5M ROAD AT WARD 13 MANGOSUTHU**

#### **C3.2: PROJECT SPECIFICATIONS**

##### **STATUS**

The Project Specification, consisting of two parts, forms an integral part of the contract and supplements the Standard Specifications.

Part A contains a general description of the works, the site and the requirements to be met.

Part B contains variations, amendments and additions to the Standardized Specifications and, if applicable, the Particular Specifications.

In the event of any discrepancy between a part or parts of the Standardized or Particular Specifications and the Project Specification, the Project Specification shall take precedence. In the event of a discrepancy between the Specifications, (including the Project Specifications) and the drawings and / or the Bill of Quantities, the discrepancy shall be resolved by the Engineer before the execution of the work under the relevant item.

The standard specifications which form part of this contract have been written to cover all phases of work normally required for road contracts, and they may therefore cover items not applicable to this particular contract.

## **PART A: GENERAL**

### **PS1    PROJECT DESCRIPTION**

The employer's objective is to undertake a re-gravelling and rehabilitation project including stormwater controls in Mangosuthu in ward 13 with a total length of 1900m. On average the road width is 5-6m wide that needs to be re-gravelled, with the provision of all relevant stormwater controls, to make access to residential areas easily accessible and generate employment in surrounding areas.

The employer is committed to Black Economic Empowerment by means of the employment of emerging contractors in accordance with its Reconstruction and Development Programme.

<b>Scope</b>	<b>Road Name</b>	<b>Road Length</b>	<b>Total Lengths</b>
Re-gravelling and Rehabilitation Project with stormwater controls	Mangosuthu	1900m	1900m

### **PS2    DESCRIPTION OF THE SITE AND ACCESS**

#### **2.1    Location of site**

The locality and the limits of the project are as shown on the locality plan overleaf

## LOCALITY PLAN



See The Area Highlighted in Red.

## 2.2 Access to site

The contractor shall be responsible for the maintenance and reinstatement of damage caused by him or his agents/deliveries to any property (Private or State Owned), fauna and flora and rights of way.

The contractor shall take cognizance of the aforementioned items and should allow in his rates tendered for any costs that could be incurred due to damages by the contractor.

## PS3 DETAILS OF THE WORKS

A brief detail of the works for which this specification is applicable is as follows:

Project	Road Name	Pavement Strategy	Description
<b>Re-gravelling and Rehabilitation Project with stormwater controls</b>	Mangosuthu	1900m	In-situ treatment of roadbed, Layer works, Stormwater Controls, Gabions and Channels

## 3.2 Ancillary works

The following ancillary works shall form part of this contract:

- Subsoil drainage.
- Surface Drainage

### **3.3 Climatic conditions**

Mkhondo receives an average precipitation of about 138mm during the month of December. The area has an average minimum temperature of 7°C (coldest night) during the month of July, and an average maximum temperature of 27°C (hottest day) from the month of October to February.

### **3.4 Temporary Works**

Not Applicable

### **3.5 Accommodation of Traffic**

Access needs to be provided to properties along the road sections during construction.

### **3.6 Construction Materials**

Tenderers must demarcate for themselves the location of sources of materials required for this construction.

### **3.7 Power Supply and other Services**

The contractor shall make his own arrangements regarding the supply of electrical power and all other services to the site. No direct payment will be made for the provision of electrical power and 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.

### **3.8 Water for Construction Purposes**

The contractor shall make his own arrangements regarding a suitable supply of water for the project and he must make adequate provision in his tender for all negotiations and procurement of water for construction activities and all related costs will be deemed to be included in his tendered rates.

### **3.9 Contractor's Camp Site**

The contractor shall make his own arrangements regarding the establishment of a camp site and housing for his construction personnel. The choice of all sites for the establishment of a camp is subject to the approval by the engineer. Camp sites within the road reserve will not be permitted

## **PS-4 CONSTRUCTION AND 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.

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

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 re-produce 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 Certificate of Completion is issued.

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.

**4.3 Responsibilities for design and construction** *(Read with SANS 1921 – 1:2004 Clause 4.2)*

**4.3.1** The responsibility strategy followed in this contract shall be A.

**4.3.2** The pavement engineer responsible for the design in accordance with the specifications will be: Adept Pro (Pty) Ltd

**4.4 Planning, Programme and Method Statements** *(Read with SANS1921-1:2004 clause 4.3)*

**4.4.1 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 taken into account in preparing the preliminary construction programme which must be submitted with the Tender. These same constraints shall apply to the final construction programme:

- a) the Contractor must indicate in his tender the proposed contract period;
- b) plant and personnel requirements to complete the project must be incorporated in the Tender and shown on the programme;
- c) a high standard of traffic accommodation must be adhered to at all times;

- d) the relocation of services;

#### **4.4.2 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, 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 following must be stated on the programme:

- (a) The quantity of work applicable to each bar item as well as the rate at which the work will be completed.
- (b) A budget of the value of completed work, month by month, for the full contract period.
- (c) The critical path.
- (d) Works to be undertaken by Local Contractor (if applicable).
- (e) Works to be undertaken by Sub-Contractors.
- (f) Schedule of plant and resources to be utilized.

The Contractor's attention is also drawn to clause 5.7.1 of the General Conditions of Contract 2015.

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

The Contractor will be solely responsible for the production of 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.

**4.7 Earthworks** *(Read with SANS 1921 - 1 : 2004 clause 4.10)*

**4.7.1 Borrow pits and spoil areas**

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

**4.8 Testing** *(Read with SANS 1921 - 1 : 2004 clause 4.11)*

**4.8.1 Process control**

The Contractor shall arrange for his own process control tests. The Contractor may establish his own laboratory on site for this purpose, 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.

**4.8.2 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 shall have his own acceptance control tests carried out by the dedicated site laboratory as approved by the client. The cost of acceptance testing shall be to the account of the client.

**4.9 Site Establishment** *(Read with SANS 1921 - 1 : 2004 clause 4.14)*

#### **4.9.1 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 and the Employer. Possible locations for a campsite shall be pointed out at the Site Inspection Meeting. 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, water supply and all other services. No direct payment shall be made for the provision of electrical, water or any 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 sub-Contractors are able to identify themselves as members of the construction team.

#### **4.9.2 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 will only be allowed where temporary facilities have to be provided.

#### **4.9.4 Facilities for the Engineer**

A site office for the Engineer is required. The office must provide sufficient space and furniture (chairs and conference table) to house a meeting of 12 people.

No housing is required for the Engineer or his Representative. Communication costs and a laptop will be required for the use of the engineer's site staff.

**4.10 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.

**4.11 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.

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

A provisional amount is included in the bill of quantities for the protection and/or shifting of services.

Two weeks 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. The Contractor shall make provision in his programme for the location and/or shifting of services.

The Contractor shall take note of the requirements of clause 1202 of the standard specifications with regard to services.

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

##### **4.12.1 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 to 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 (OHSA) No 85 and Amendment Act No 181 of 1993, and the OHSA 1993 Construction Regulations 2014 issued by the Department of Labour.

For the purpose of 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 section C1.5.

#### **4.12.2 Health and Safety Specifications and Plans**

(a) Employer's Health and Safety Specification

The Employer's Health and Safety Specification is included in Section C3.3, Part E of the tender documents as part of the Particular Specifications.

(b) Tenderer's Health and Safety Plan

The Tenderer shall submit with the tender his own documented Health and Safety Plan he proposes to implement for the execution of the work under the contract. The 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 sub-contractors, employees and visitors to the site, including safety training in hazards and risk areas (*Regulation 5*); 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; 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 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 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.

#### **4.12.3 Cost of compliance with the OHSA 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.

#### **4.13 Requirements for Accommodation of Traffic** (*Read with SANS 1921 - 2 : 2004* )

##### **4.13.1 General**

The Contractor will be responsible for the safe and easy passage of public traffic past and on sections of roads of which he has occupation or where work has to be done near traffic.

The travelling public shall have the right of way on public roads, and the Contractor shall make use of approved methods to control the movement of his equipment and vehicles so as not to constitute a hazard on the road.

Accommodation of traffic, where applicable shall comply with SANS 1921-2: 2004: Construction and Management Requirements for Works Contracts, Part 2: Accommodation of Traffic on Public Roads occupied by the Contractor. The Contractor shall obtain this specification from Standards South Africa if accommodation of traffic will be involved on any part of the construction works.

##### **4.13.2 Basic Requirements**

The travelling public shall have the right of way on public roads, and the Contractor shall make use of approved methods to control the movement of his equipment and vehicles so as not to constitute a hazard on the road.

The Contractor shall ensure that all road signs, barricades, delineators, flagmen and speed controls are effective and that courtesy is extended to the public at all times.

Failure to maintain road signs, warning signs or flicker lights, etc, in a good condition shall constitute ample reason for the Engineer to suspend the work until the road signs, etc, have been repaired to his satisfaction.

The Contractor may not commence constructional activities affecting existing roads before adequate provision has been made to accommodate traffic in accordance with the requirements of this document and the South African Road Traffic Signs Manual.

The Contractor shall construct and maintain all temporary drainage works necessary for temporary deviations.

The Contractor shall provide and grant access to persons whose properties fall within or adjoin the area in which he is working.

#### **4.13.3 Payment**

The Contractor's tendered rates for the relevant items in the Bill of Quantities shall include full compensation for all possible additional costs which may arise from this, and no claims for extra payment due to inconvenience as a result of the *modus operandi* will be considered.

#### **4.14 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:

##### **4.14.1 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.

##### **4.14.2 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.

#### **4.14.3 Environmental Management Plan**

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

## **PART B: AMENDMENTS TO THE STANDARD AND PARTICULAR SPECIFICATIONS**

### **PROJECT SPECIFICATIONS RELATING TO THE STANDARD SPECIFICATIONS AND OTHER ADDITIONAL SPECIFICATIONS**

In certain clauses in the standard, standardised and particular specifications, allowance is made for 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 alternative or additional requirements applicable to this contract are contained in this part of the project specifications. It also contains the necessary additional specifications required for this particular contract.

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 relevant clause or payment item in the standard specification.

The number of a new clause or 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, but followed by a new number which follows on the last clause or item number used in the relevant section of the standard specifications.

In all cases where reference is made in COLTO to the “General Conditions of Contract” this will refer to the “General Conditions of Contract for Construction Works” 3rd Edition 2015. Reference made to a specific Clause in COLTO must be cross-referenced from the GCC2004 to the specific Clause number in GCC2015.

## **SECTION 1100: DEFINITION AND TERMS**

In all cases where “Directorate Transport Planning” appears in the text or in drawings contained in this document it shall be read as “Province of Mpumalanga”.

## **SECTION 1200: GENERAL REQUIREMENTS AND PROVISIONS**

### **B1202 SERVICES**

: *Delete and replace the words:*

“Clause 15 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 3<sup>rd</sup> edition”.

### **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 and fourth paragraphs and replace with the following:*

“The contractor shall submit the quality assurance plan and systems he proposes using to the Employer’s Agent before Commencement of the Works as per Clause 5.3.1 of GCC2015. 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 Employer’s Agent 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 4.5 of the general conditions of contract.”

Add the following at the end of the fourth paragraph:

“Road markings, particularly overtaking barrier lines are also elements of the road that require proper setting out. The contractor shall provide the Employer’s Agent that critical reference

points have been satisfactorily recorded for later reinstatement before any work may commence that will obliterate the existing markings.”

**B1209 PAYMENT**

: 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 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 2015.

**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"

**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 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 ‘n’ value of working days, as specified in this clause as being expected delays for which the contractor must make allowance in his programme, have been calculated from the figures given in Table B1215/1 below:

Table B1215/1: Rainfall records

MONTH	AVERAGE RAINFALL (mm)	(n) DELAY DAYS RAIN (per month)	(n) DELAY DAYS OTHER (per month)
JANUARY	122	12	
FEBRUARY	84	8	
MARCH	77	8	
APRIL	41	7	
MAY	12	2	
JUNE	8	1	1

JULY	6	1	1
AUGUST	8	1	2
SEPTEMBER	22	3	1
OCTOBER	86	7	
NOVEMBER	107	11	
DECEMBER	109	11	
TOTAL	682		

The number of rain-related delays are the days on which 10 mm of rain or more is expected to fall. Other inclement weather delays for which the contractor must make allowance in his programme have been derived from previous experience of wind and temperature influence on similar construction in the area of the site. Actual extensions of time due to inclement weather shall be agreed between the Employer's Agent's and contractor's representatives on the site. The agreed whole days or parts thereof shall be recorded at the monthly site meetings.

**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 8.1 of the General Conditions of Contract for construction works 2015.

**B1219 WATER**

**:** Add the following:

"Water for use on site other than municipal, shall be subject to the required permit from DWAF. This shall include such extraction points as rivers, dams, streams, and boreholes".

**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. He shall be responsible for the maintenance along this portion of the road until completion of the contract.

**B1229 SANS 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.

**B1230 ENVIRONMENTAL IMPACT CONTROL**

: Respect for the environment is an important aspect of this contract. The environmental control of the site shall be governed by the Environmental Management Specification and Plan included in Part C of the Particular Specification C3.3 of this document, which provides, inter alia for:

- 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 Employer's Agent.
- c) No littering by construction workers shall be allowed. A refuse control system shall be established for the collection and removal of refuse to the satisfaction of the Employer's Agent.
- 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.
- h) Clearing shall be limited to the road prism and, where applicable, detours, which shall be sited in consultation with the Employer's Agent and the local communities.
- k) The Environmental Management Plan included as Part C Section C3.3 of the Particular Specifications provides further detail regarding the sensitivity of the area and the requirements regarding mitigating the impact of the construction process, which shall be observed by the Contractor. Other than the pay items provided for in Schedule E of the Bill of Quantities or elsewhere, no other additional payment shall be made to the Contractor for complying with the Environmental Management Specification and Plan. Costs involved in order to comply with these shall be regarded to be included in other rates.

**B1231 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.

**B1232 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 Employer’s Agent 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 Employer’s Agent against any claims, damages and / or costs that may arise in this regard.

**B1233 PAYMENT**

: The requirements of Part A of the Project Specifications and the Special Conditions of Contract shall be referred to below.

Item	Unit
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**B12.01: Training**

a) CETA accredited training	Prov Sum
-----------------------------	----------

This payment item covers the cost of all CETA accredited training provided for locally sourced labourers. The sum covers the cost of paying for the commercial training service provider, for the venue, and for stationary etc.

The labourers attending the training will be paid 100% of their daily wages for the duration of the training. These cost will not be compensated under this item and is deemed to be included in the Contractors rates for labour intensive items.

Progress payments shall be considered by the Employer’s Agent. Payment of 50% of the amount quoted shall be kept in retention until such time as training certificates have been duly issued by the service provider.

Invoices for the services rendered need to be provided to the Employer's Agent when claiming for these items. Only the amount actually spent and approved by the Employer's Agent may be claimed.

b) Handling cost and profit in respect of B12.01 a) above %

No progress payment shall be considered for this item. This amount shall be payable only after all certificates have been issued to trainees.

The Contractor's cost in respect of all expenditure on training shall be covered under the items provided.

Item	Unit
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**B12.02 Excavation for services:**

a) Excavation in search of existing services in soft material situated within the following depth ranges below the surface level

i) 0m to 2m	m <sup>3</sup>
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b) Extra over item B12.02 a) for excavation in hard material in the close vicinity of services using jackhammers, power tools, etc where no blasting or machine excavation is permitted	m <sup>3</sup>
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Item	Unit
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**B12.03 Relocation and protecting of existing services:**

a) Relocation, including lowering or raising, protection and/or repair of existing services which are not allowed for under items in the schedule of quantities.	Prov Sum
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Invoices for the services rendered, and or day-work schedules need to be provided to the Employer's Agent when claiming for these items. Only the amount actually spent and approved by the Employer's Agent may be claimed.

Handling cost and profit	%
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Item	Unit
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**B12.04 Provision of Community Liaison Officer**

a) Community Liaison Officer	Prov Sum
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b) Handling costs and profit with respect off sub-item B12.04 a)	%
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Expenditure of the above item shall be made in accordance with the general conditions of contract. Invoices for the services rendered need to be provided to the Employer's Agent when claiming for these items. Only the amount actually spent and approved by the Employer's Agent may be claimed.

The tendered percentage is a percentage of the amount actually spent under the sub-item B12.04 a), which shall include full compensation for the handling costs of the contractor, and the profit in connection with providing the community liaison officer.

Item	Unit
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**B12.06 Community participation**

- a) Community Participation
- b) Handling costs and profit with respect off sub-item B12.09 a)

Item	Unit
<b>B12.09 Supply, transport to site and erect contract signboards</b>	<b>Number</b>
	<b>(No.)</b>

The item shall cover all costs in regard to producing and erecting the signboards in accordance with the drawing and leave them erected during the liability period and removal at the final completion of the contract.

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

**B1303 PAYMENT**

- : Add the following at the end of Item 13.01(1).
- ".....and provided the Contractor has fulfilled his obligations as far as the Employer's Agent's office, laboratory and housing accommodation is concerned".
- Add the following:
- “The contractor shall, at each area where work is being undertaken, provide on a daily basis at least one portable chemical latrine unit for use by construction workers employed on the project. The latrine units shall be serviced daily and kept in a hygienic and orderly state to the satisfaction of the Employer's Agent. No separate payment shall be made for this requirement and shall be deemed to be included in the rates tendered for the contractor's time- related obligations.
- Tenderers shall allow under the rates in this section for the costs involved in complying with the health and safety requirements”.

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

**B1402 OFFICES AND LABORATORIES**

- : (a) General
- Delete the fourth sentence in the first paragraph of Sub-clause 1402 (a) and replace with:
- “Office buildings shall have timber or concrete floors covered with edge-to-edge Foam-

backed needle-punched carpeting, and laboratory buildings shall have concrete floors”.

Add the following new paragraph at the end of this sub-clause:

“The offices, laboratory and stores shall, unless otherwise agreed, be erected in close proximity to the contractor's offices and laboratory. The contractor shall take all reasonable precautions to prevent unauthorised entry to the Employer’s Agent’s offices and laboratories and to ensure the general security of the offices and laboratories.

The facilities to be provided shall be fenced off by a 1.8 metre high veranda type security fence with diamond mesh on the vertical portion and barbed wire on the overhang. A security gate shall be provided in the fence which shall be guarded at all times by an acceptable watchman provided by the contractor.

The Employer’s Agent’s establishment may be incorporated within the contractor’s establishment provided that the preceding requirements are met to the satisfaction of the Employer’s Agent.

Separate payment shall be made for the provision and erecting of the security fence and gate, but the cost in respect of the provision of a watchman at all times by the contractor shall be deemed to be included in the contractor’s tendered rate for item B13.01(c).

The tendered rates under this section of the schedule of quantities shall also include full compensation for the dismantling and removal from site of all offices, laboratories and other facilities provided for the Employer’s Agent's supervisory staff at the completion of the contract."

#### b) Offices

Add the following new sub-sub-clause:

“(ix) The Employer’s Agent’s site supervisory staff (three persons) shall be provided with two-way radios as well as cellular phones by the contractor for contract administration and supervision purposes (to always use the one which is least costly and most functional for the situation and purpose). Provision is made in the schedule of quantities for separate payment for the supply and operating costs of such communication devices for the Employer’s Agent’s staff. The pay item does not cover the cost of communication of the contractor’s staff, and such costs are deemed to be covered by the rates.”

### **B1403 HOUSING**

:

#### c) Rented accommodation

Add the following:

“The Employer’s Agent may arrange for obtaining of rented accommodation for his supervisory personnel on site. Payment of such rent shall be made under provisional sum in sub-item B14.07 and shall be expended on a monthly basis by the contractor as ordered by the Employer’s Agent.”

## **B1406 MEASUREMENT AND PAYMENT**

: The variation items in the Bill of Quantities are self-explanatory.

Measurement and payment in respect of the provisional and prime sum items shall be made in accordance with the provisions of the general conditions of contract.

The tendered percentages are percentages of the amount actually spent, which shall include full compensation for handling costs of the contractor and the profit in connection with the payment of the cost of services relating to the use by the Employer's Agent's site staff of the services.

Add the following item:

Item	Unit
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### **B14.01 Provision of Offices, accommodation and laboratory**

a) Office accommodation for Resident Employer's Agent staff, including all furniture, services and carports.	lump-sum
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e) Ablution units and kitchen area, including fittings, services and utensils.	lump-sum
--	----------

The tendered lump sum shall be in full compensation for supplying and erecting the accommodation, fittings and furniture as specified in the project specifications and shown on the drawings, and for the proper maintenance and the subsequent removal thereof from the site on completion of the works.

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

b) Prime cost items and items measured and paid for in a lump sum	lump sum
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Add the following subitems:

ix) The provision of telephone services, cellular service contracts including cell phones for all supervisory staff	(PC)sum
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x) The provision of 3G data services, mobile contracts including 3G modems	(PC)sum
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xi) The provision of computer hardware and software facilities for the supervisory staff	(PC)sum
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xii) The provision of printing, copying and scanning facilities for the supervisory staff	(PC)sum
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xiii) The provision for digital cameras	(PC)sum
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xiv) Handling costs and profit in respect of subitem 14.03(b) above	Percentage (%)
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Expenditure of the above item shall be made in accordance with the general conditions of contract. Invoices for the services rendered need to be provided to the Employer's Agent when claiming for these items. Only the amount actually spent and approved by the Employer's Agent may be claimed.

The tendered percentage is a percentage of the amount actually spent under subitem B14.03(b).

## **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) 3344510 Fax: (012) 323 9574.

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**

: (a) Safety

Add the following:

“The contractor shall be responsible for maintaining the existing road surface both within the works area and the advance warning and termination areas in a safe and trafficable condition for the duration of the contract.”

Traffic shall be accommodated with the least delay and discomfort to the public in accordance with the South African Road Traffic Signs Manual (SARTSM) and with the National Road Traffic Regulations, 2000.

When instructed, the Contractor shall prepare the necessary press releases and/or public notification and the placement of advertisements in regional and local newspapers advising the public of imminent road construction.

Copies prepared for press releases shall be submitted timeously to the Employer for consideration and approval.

The Contractor's tendered rates for the relevant items in the schedule of quantities shall include full compensation for all possible additional costs which may arise from this, and no claims for extra payment due to inconvenience as a result of the modus operandi will be considered."

(f) Approval of temporary deviations

Add the following:

“If, after any temporary deviation has been constructed, any changes are considered necessary or desirable, the proposal shall be submitted to the Employer’s Agent for his approval.”

(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 Employer’s Agent for approval before the candidate is appointed as the traffic safety officer. “

Add the following sub-sub-clauses:

(ix) Ensure that all obstructions related to the contractor's activities be removed before nightfall where applicable as instructed by the Employer's Agent and that the roads are safe for night traffic.

(x) 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.

(xi) 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 sub-clauses:

(k) Site personnel

The contractor shall ensure that all his personnel, excluding those who are permanently office bound, are equipped with reflective safety jackets 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 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 shall be kept in good condition and any jackets that are, in the opinion of the Employer's Agent, ineffective shall be immediately replaced by the contractor.

### **B1503 TEMPORARY TRAFFIC-CONTROL FACILITIES**

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

"The contractor shall provide, erect and maintain the necessary traffic-control devices, road signs, channelization devices, barricades, warning devices and road markings (hereinafter referred to as traffic-control devices) in accordance with these special provisions and as shown on the drawings and in the SARTSM and remove them when no longer required. It shall be incumbent upon the contractor to see to it that the abovementioned traffic-control devices are present where required at all times and are functioning properly."

Replace the third paragraph with the following:

"The type of construction, spacing and placement of traffic-control devices shall be in accordance with the SARTSM. The recommended arrangements of the traffic control devices illustrated and/or drawings issued by the Employer's Agent shall not be departed from without prior approval of the Employer's Agent. The arrangements expected to be most commonly used in the contract are given on the tender drawings.

The details shown for spacing and placement of traffic-control facilities may however, be revised at the discretion of the Employer's Agent where deemed necessary to accommodate local site geometry and traffic conditions."

(b) Road signs and barricades

Add the following:

"The contractor shall be responsible for the protection and maintenance of all signs, and shall at his own cost replace any that have been damaged, lost, or stolen.

All temporary road signs required to remain in position for some time shall be pole mounted as shown on the drawings. All temporary road signs required to be moved more often shall be mounted on portable supports for the easy moving of signs to temporary positions. The only permitted method of ballasting the sign supports shall consist of durable sandbags filled with sand of adequate mass to prevent signs from being blown over by wind. The cost of the sandbags shall be included in the tendered rates for the various types of temporary road signs.

(e) Warning Devices

*Add the following:*

"All construction vehicles and plant used on the works shall be equipped with rotating 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 Employer's Agent.

(i) Vehicle mounted flashing lights

Rotating lights shall have an amber lens of minimum height of 200mm 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, 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 rotating amber flashing lights which shall be 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.

Rotating 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 covering the use of the vehicles.

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

(ii) Sign mounted flashing lights

Two amber flashing lights shall be vertically mounted on top of the traffic signs at each end of each traffic accommodation section as shown on the drawings. The lights shall be operated during the hours of darkness.”

## **SECTION 1700: CLEARING AND GRUBBING**

### **B1702 DESCRIPTION OF WORK**

: a) Clearing

Add the following:

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 shall be taken after clearing (topsoil or unsuitable roadbed material) and roadbed preparation if applicable.

Payment for gabion boxes and mattresses which have to be removed and the material sorted and stacked shall be made under section 5200.

## **SECTION 2100: DRAINS**

### **B2101 SCOPE**

: Amend the first paragraph to read:

“This section covers all work both rehabilitative and new work in connection with the excavation and construction of open drains, subsoil drainage and banks and dykes at the locations and to the sizes, shapes, grades and dimensions as shown on the drawings or as directed by the Employer’s Agents, and the test flushing of subsoil drains.”

### **B2104 SUBSOIL DRAINAGE**

: (a) Materials

(ii) Natural permeable material

Add the following to the 3<sup>rd</sup> paragraph:

“The crushed stone shall be coarse (19mm nominal) and shall be washed clean of all fines”, conforms to the following specification:

Percentage passing through a 26,5mm sieve: 100 %.

Percentage passing through a 19,0mm sieve: 60-85 %.

(iii) Synthetic-fibre filter fabric

Under item (4) Selection, of this sub-clause, replace the 1<sup>st</sup> paragraph with the following:

“The filter-fabric used for subsoil drains shall be grade 2 and shall satisfy the criteria for a grade 2 geotextile as given in Table 2104/2.”

(b) Construction of subsoil drainage systems

Add the following sub-clause:

“(v) Proving of pipes in subsoil drainage systems

On completion of the pipe laying and prior to backfilling, all pipe joints shall be surveyed as proof of their installation to line and level. After backfilling the pipes shall be proved by

pulling through a cylindrical cleaning brush followed by a wooden mandrill  $\pm$  400mm long and 5mm in dia less than the bore of the pipe. Proving of pipes shall not be paid for separately and the cost thereof shall be deemed to be included in the rate tendered for laying the pipe.”

**B2107 MEASUREMENT AND PAYMENT**

:

Item	Unit
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**B21.01 Excavation for open drains**

Add the following to the penultimate paragraph:

“The tendered rate shall also include full compensation for trimming the open drains”

“This item does not include the excavations for the earth channel along the road profile as per typical cross section, which is deemed included in the mass earthworks (Section 3300). This item is specifically for additional open drains leading away from the road profile, like mitre drains, etc.”

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

### **B2304 CONSTRUCTION**

- : (e) Cast in-situ kerbs and channels

Add to Sub-clause 2304(e) the following:

Where new kerbing and channelling has to be laid in an existing bitumen surface, the surface shall be neatly cut to a straight line with a suitable saw-cutting machine or similar approved means along the edge of the kerb or channel. The existing road foundation shall then be carefully removed over the width and depth required to construct the new kerb and channel. No payment shall be made for repair work as instructed by the Employer's Agent to damage caused by the cutting/excavation process of surfacing and base layers. Any concrete spilt onto the surfacing shall immediately be removed and cleaned. Where so required by the Employer's Agent the contractor shall, without any additional compensation, paint Emulsion over the stained surface.

Add the following new Sub-clauses to Clause 2304:

- (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.

## **SECTION 3100: BORROW MATERIALS**

### **B3103 OBTAINING BORROW MATERIALS**

- : (a) General

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

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 6 months, nor shall the stockpile be higher than 2,5m.

(c) Excess Overburden

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

**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.

**B3108 MEASUREMENT AND PAYMENT**

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

(1) 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, from additional borrow pits identified by the Employer's Agent, from commercial sources, or from borrow pits obtained by the Contractor himself.

Add the following new items:

## **SECTION 3300: MASS EARTHWORKS**

### **B3303 CLASSIFICATION OF CUT AND BORROW**

: (a) Classes of excavation

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

(i) Soft excavation

Add the following at the end:

Or

“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 hard excavations all excavations must be considered as soft excavation.

(iii) Hard Excavation

Add the following:

A full survey including proto report of all dwellings within a radius of 200m of a blasting area needs to be conducted before blasting operations commence. The Contractor is liable for any damage that occurs to any structure, cable, sewer, pipe, etc. and immediately notifies the Employer’s Agent of any such damage. The Employer’s Agent arranges for the damage to be repaired by the owners of the damaged service and the cost of such repairs is deducted from any monies due to the Contractor.

### **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**

: (d) Benching

Add the following:

“Benching of fill and pavement layer material is required to be undertaken into the existing fill embankments and pavement layers. No additional payment shall be made over and above the normal pay items applicable to earthworks and pavement layers where benching is required for widening of the existing road formation. Benching shall be undertaken as shown on the drawings.

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 and details of benching are shown on the drawings.”

(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 fills being widened or constructed.

## **SECTION 3400: PAVEMENT LAYERS OF GRAVEL MATERIAL**

### **B3402 MATERIALS**

**:** (a) General

All layers shall comply with the requirements of Tables 3402/1, 3402/2, 3402/4 and 3402/5 of the Standard Specification. The requirements of Section 3500: Stabilization shall also apply to the relevant layers.

Material requirements for gravel pavement layers are in accordance with TRH4 and shall be indicated on the drawings.

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

### **B3406 QUALITY OF MATERIALS AND WORKMANSHIP**

**:** Add to Clause 3406 the following:

Test results and re-measurements shall be assessed in accordance with the provisions of Section 8200: Quality Control (Scheme 1) of the standard specifications, as amended in these project specifications.

### **B3407 MEASUREMENT AND PAYMENT**

**:** Delete the note at the start of the measurement and payment clause dealing with work in restricted areas. 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.

## **SECTION 3500: STABILISATION**

### **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 32,5 shall be used for stabilisation purposes."

### **B3503 CHEMICAL STABILIZATION**

**:** (i) Construction limitations

Add to Sub-clause 3503(i) the following:

Cement stabilization shall not be carried out during falling temperatures when the ambient air temperature falls below 7°C or during rising temperatures when the ambient 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 all measures necessary in this regard and shall especially refrain from stabilizing when such night temperatures are probable.

All stabilized layers which have been damaged by frost or by the formation of ice in the layer shall be removed and replaced by the Contractor at his expense unless agreed otherwise by the Employer's Agent. The Contractor shall make due allowance for these requirements in his construction programme, and no claims in this regard will be considered.

**B3509 QUALITY OF MATERIALS AND WORKMANSHIP**

: Add to Clause 3509 the following:

Test results and re-measurements shall be assessed in accordance with the provisions of Section 8200: Quality Control (Scheme 1) of the standard specifications, as amended in these project specifications.

The Contractor shall advise the Employer's Agent at least 24 hours in advance of any stabilization work to enable him to organise and conduct his own control tests.

Where the stabilising agent is to be spread by hand, the pockets of stabilising agent shall be placed on the layer at regular intervals. However, spreading shall not be carried out before the Employer's Agent is satisfied that the correct quantity of stabilising agent can be spread.

Stabilised layers shall be covered for curing within 24 hours, as specified. If the stabilised layer is found to have failed, the cover material shall be removed and the layer rectified if instructed by the Employer's Agent. No additional payment shall be made for such removal and remedial work.'

## **SECTION 5200: GABIONS**

### **B5202 MATERIALS**

: Add the following new sub-clause:

(g) Concrete

Concrete work shall be carried out in accordance with the provisions of Sections 6200, 6300 and 6400.

### **B5203 CONSTRUCTION OF GABION CAGES**

: (a) General

Add the following new sub-clause:

“(iii) Reno mattresses or similar may be used as alternative to gabion boxes. These Reno mattresses are to be manufactured of 80mm x 100mm mesh (2,5mm diameter wires, diaphragm spacing 0,6m).

### **B5204 CONSTRUCTING GABIONS**

: (c) Assembly

Delete and substitute with:

(c) Assembly, erection and stretching

(i) Assembly

“Prior to assembly, the gabion material shall be opened out flat on the ground and stretched to remove any kinks and bends. The gabion boxes shall then be assembled individually by raising the sides, ends and diaphragms ensuring that all creases are in the correct position and that the tops of all four sides are even. The four corners of the gabion boxes shall be laced first followed by the edges of internal diaphragms to the sides. In all cases lacing shall commence at the top of the box by twisting the end of the lacing wire around the selvages. It shall then be passed round two edges being joined, through each mesh in turn and securely tied off at the bottom. The ends of all lacing wire shall be turned to the inside of the box on completion of each lacing operation.

Gabion mattresses may be cut and re-joined to form a curved shape, or any other appropriate shape. An extra over rate shall apply when mattresses have to be cut and joined on instruction from the Employer’s Agent.

(ii) Erection

Only assembled boxes, or groups of boxes, shall be positioned in the structure. The side, or end, from which work is to proceed, shall be secured to either completed work or by rods or stakes driven into the ground at the corners. These must be secured and reach at least to the top of the gabion box. Further gabions shall then be positioned in the structure as required, each being securely laced to the preceding one at all corners and diaphragm points.

(iii) Stretching

On completion of erection of a suitable length of gabion, the gabion boxes shall be stretched using a wire strainer or winch of at least one ton capacity firmly secured to the free end of the assembled gabion boxes.

Whilst under tension the gabion boxes shall be securely laced along edges (top, bottom and sides) and at diaphragm points, to all adjacent boxes and shall thereafter be filled."

(d) Rock filling

Add the following new sub-sub-clause:

(iii) General

"Filling shall be carried out only whilst gabion boxes are under tension. Filling material shall consist of rock of size not less than 120mm and not greater than 250mm so placed to produce a neat face and line with a minimum of voids.

Internal horizontal bracing wire shall be provided at 500mm vertical centres or such spacing to ensure a ratio of four to every 1m<sup>3</sup> of filling. These bracing wires shall be wrapped around two mesh wires and extended from front to back so positioned to ensure a neat face and line free of excessive bulges and depressions. Gabion boxes shall be filled in stages and horizontal bracing wires inserted as filling is brought up.

Similar bracing wires used vertically shall be provided in 0,5mm deep gabions at 330mm horizontal centres where water falls directly onto gabions or where a neat face is required.

Tension on the gabion boxes shall be released only when sufficiently full to prevent the mesh from slackening.

Gabion boxes shall be overfilled by 20 to 50mm above their tops to allow subsequent settlement of the filling."

Add the following new sub-clauses:

(e) Final wiring

"Closing and wiring down of lids shall proceed as soon as possible after filling operations and certainly in the likelihood of storms or floods during construction. The wiring down shall consist of wrapping around wire at such intervals as required or specified.

Lids shall be stretched tight over the filling with bars and wired down securely through each mesh along all edges, ends and diaphragms. The ends of all tying and bracing wires shall be turned into the gabion box on completion of all lacing operations.

Tightness of mesh, well packed filling and secure lacing is essential in all structures."

(f) Removal, dismantling and stacking of gabions

"Existing gabions, either damaged or not, that require to be removed or moved to a new location shall be dismantled. Material not required for re-assembly or unsuitable for re-use shall be neatly stacked at approved locations in accordance with the Employer's Agent's instructions. Payment will be made only for gabions removed in accordance with the written instruction of the Employer's Agent.

Where gabions require moving, or as declared suitable by the Employer's Agent are re-usable, the contractor shall re-use all the material, plus supply such new materials as may be required to re-assemble the gabion again to the standard specification for new gabions."

(g) Blinding Layer

Where indicated on the drawings, a blinding layer of 15MPa concrete 75mm thick shall be laid as a surface on which to place the gabions. The surface of the concrete shall be properly compacted and screeded to form a Class U1 surface finish as specified in Clause 6209 of the standard specification.

**B5205 MEASUREMENT AND PAYMENT**

: Add the following new pay item:

Item

Unit

**B52.06: Concrete Class 15/19 in Blinding Layer**

**cubic**

**metre (m<sup>3</sup>)**

The unit of measurement shall be the cubic metre of concrete in the blinding layer, constructed to the line and level indicated on the drawing or as instructed by the Employer's Agent.

The tendered rate shall include full compensation for furnishing all material and labour, including formwork as necessary, mixing, placing and compacting the concrete, and screeding to a Class U1 surface finish.

**B52.07: Extra over Item 52.03(c) for cutting mattresses to suit**

**cubic**

**metre (m<sup>3</sup>)**

The tendered rate shall include full compensation for all costs associated with cutting gabion mattresses to the required shape and the re-joined pieces to form sound cages.

**SECTION 5500: FENCING**

**B5502 MATERIALS**

: (c) Wire

(i) Barbed wire

Delete the contents of Sub-clause 5502(c)(i) and replace with the following :

Barbed wire shall comply with the requirements of SABS 675 and shall be mild-steel-grade zinc-coated (heavy duty - fully galvanised) double-strand uni-directional-twist wire, each strand 2,5 mm in diameter, for use at any height above ground.

Barbs shall be manufactured from 2,0 mm zinc-coated mild steel wire and shall be spaced at not more than 150 mm.

(ii) Smooth wire

Delete the contents of Sub-clause 5502(c)(ii) and replace with the following :

Smooth wire shall comply with the requirements of SABS 675 and shall be of the types specified below:

Straining wire shall be 4,0 mm diameter zinc-coated (fully galvanised) high-tensile-grade steel wire.

Fencing wire shall be high-tensile-grade steel 2,24 mm diameter zinc-coated (fully galvanised) wire.

Tying wire shall be 2,5 mm diameter mild-steel-zinc-coated (heavy duty - fully galvanised) wire for tying fencing wire to standards and droppers and 1,6 mm mild-steel-zinc-coated wire for tying netting and mesh wire to the fencing wire.

## **SECTION 5600: ROAD SIGNS**

### **B5601: SCOPE**

This section also covers the supply and erection of permanent danger plates a culverts and bridges at the locations indicated on the drawings or as directed by the Employer's Agent.

### **B5602: MATERIALS**

Add to Clause 5602 the following:

Concrete

Concrete for the footings shall comply with the requirements of Section 6400 of the specification.

### **B5603: MANUFACTURING OF ROAD SIGN BOARDS AND SUPPORTS**

(a) Road signboards

Add the following:

"The contractor shall make every effort to ensure that signboards are correct in all respect and before dispatching the boards from the manufacturer's factory shall provide the Employer's Agent with a 100mm x 150mm colour photograph of each sign face for approval of the correctness of the legend. Such approval will not imply final acceptance of the board. If the Contractor is in any doubt as to the correctness of the sign detail, the sign designer shall be contacted for verification."

(a) (ii) Steel profile road signboards

Add the following:

"Where the letter or legends cross the horizontal joints of the sign panels, the letter shall be cut on the joint and both ends folded around the radius.

Retro-reflective material to adjoining Chromadek panels on a sign shall be practical visual match of the specified colour."

**B5604: ROAD SIGN FACES AND PAINTING**

Add the following new subclause:

“(e) Application of retro-reflective material

All sign faces shall be faced with diamond grade retro-reflective material. Painted front sign faces shall not be used.

Where applied to Chromadek sections, retro-reflective material shall be applied as specified for aluminium section in Clause 5603(d) of the Standard Specification, and of Clause B5603(a)(ii) of this project Specification.”

**B5605: STORAGE AND HANDLING**

Add the following:

“The following shall not be allowed on the sign face:

Drilling of holes, except for the fastening of overlays. Application of any form of adhesive. Cleaning with any chemicals that are not specifically approved by the manufacturer of the retro-reflective material. Covering the sign face with an impermeable material that does not allow free circulation of air.”

**B5606: ERECTING ROAD SIGNS**

(c) Erection

Add the following:

“After erection the signboard shall be thoroughly cleaned with a cleaning agent approved by the retro-reflective material’s manufacturer.

All vegetation obstructing the new or replaced sign board shall be removed and disposed of as instructed by the Employer’s Agent.”

**B5608: DISMANTLING, STORING AND RE-ERECTING EXISTING ROAD SIGNS**

Add the following:

“Existing overhead and ground mounted road signs that are being replaced by new signs shall be dismantled and disposed of by the Contractor. Where possible the dismantling of the signs shall not be before the replacement sign is erected and displayed. Where dismantling of the sign is required before erection of the replacement sign, the dismantling shall not take place until immediately before work is to commence on the replacement, and the replacement shall be completed and the new sign displayed as soon as possible thereafter (within 72 hours).

Dismantling shall include sign panels and ground mounted sign supports.

Ground mounted sign supports shall be cut off just below ground level. Material excavated for removal of buried poles shall be replaced, and any depression made good using excess material from excavation for new signs.

Pay items are provided in the Bill of Quantities. Payment will differentiate between different types of sign panels.”

**B56.09 MEASUREMENT AND PAYMENT**

: Add the following new pay item:

Item	Unit
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**B56.01: Road sign boards with retro-reflective background**

Replace “Class I retro-reflective material” with “Class III retro-reflective material”.

**B56.10: Danger Plates**

(a) Danger plates at culverts – W401	No
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(b) Chevron plates at bridges and other locations – W401	No
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Danger/chevron plates will be paid for as specified for item 56.04 (kilometre posts).

## **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 Employer’s Agent 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**

- : 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 Employer’s Agent.

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.

## **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, indicator tests (grading and PI), moisture contents and chemical tests relating to stabilizing agent contents;

Binder tests

Concrete tests:

Slump and cube crushing strengths

### **C3.3 PARTICULAR SPECIFICATIONS**

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

#### **SECTION EMP ENVIRONMENTAL MANAGEMENT SPECIFICATION**

#### **SECTION OHS OHS 1993 SAFETY SPECIFICATION**

## **MKHONDO LOCAL MUNICIPALITY**

### **REHABILITATION & ASPHALT RESEAL OF 1KM ROAD IN HARMONY PARK WARD 14 (PRETORIUS STREET) WITHIN THE MKHONDO LOCAL MUNICIPALITY IN THE MPUMALANGA PROVINCE**

#### **PARTICULAR SPECIFICATIONS**

#### **SECTION EMP: ENVIRONMENTAL MANAGEMENT SPECIFICATION**

##### **EMP.1 General**

In order to ensure that the construction works is carried out in an environmentally sensitive matter, strict compliance to the Environmental Management Plan (EMP) guidelines is required. The purpose of the EMP is to:

- Encourage good management practices through planning and commitment to environmental issues,
- Provide rational and practical environmental guidelines to:
  - i. Minimise disturbance of the natural environment,
  - ii. Prevent pollution of land, air and water,
  - iii. Prevent soil erosion and facilitate re-vegetation.
- Adopt the best practicable means available to prevent or minimise adverse environmental impact,
- Develop waste management practices based on prevention, minimisation, recycling, treatment or disposal of wastes,
- Train employees and contractors with regard to environmental obligations.

##### **EMP.2 Training and Induction of Employees**

- The Contractor has a responsibility to ensure that all those people involved in the project are aware of and familiar with the environmental requirements for the project (this includes sub-contractors, casual labour, etc.). The EMP shall be part of the terms of reference for all contractors, sub-contractors and suppliers.

### **EMP.3 Complaints Register and Environmental Incident Book**

Any complaints received by the project team from the public will be recorded. The complaint should be brought to the attention of the site manager, who will respond.

The following information must be recorded:

- Time, date and nature of the complaint,
- Type of communication (telephone, letter etc),
- Name, contact address and telephone number of the complainant,
- Response and investigation undertaken and
- Actions taken and by whom.

All complaints received will be investigated and a response given to the complainant within 14 days.

All environmental incidents occurring on the site will be recorded. The following information will be provided:

- Time, date, location and nature of the incident,
- Actions taken and by whom.

#### **EMP.4 Site Cleanliness and Neatness**

- Location of a construction camp is to be approved by the Engineer and is to be restored to its previous condition after completion of construction.
- The construction camp should preferably be fenced with a 1.8m bonnox fence or similar approved.
- All materials, equipment, plant and vehicles must be stored within the construction camp.
- A dedicated area must be made available for construction staff to change and store their personal belongings.

#### **EMP.5 Access**

- Access to existing roads, schools, buildings, shops and residential properties must not be impeded during construction.
- Access roads utilised by the Contractor must be maintained in good condition.

#### **EMP.6 Borrow Pits**

- Mining authorisations (permits) for borrow pits must be obtained from the Department of Minerals and Energy (DME) in consultation with the Department of Water Affairs and Forestry (DWAF).
- Spoil dumps resulting from borrow pits must not interfere with any natural surface drainage.
- Borrow pits must be rehabilitated after use in accordance with the requirements of DME and DWAF.

#### **EMP.7 Dust Control / Air Quality**

- Dust suppression measures must be implemented during construction by ensuring that all surfaces prone to dust generation are kept damp (e.g. use of water tanker).
- Ensure that vehicles and equipment are in good working conditions and that emissions are not excessive.
- 
- Ensure that vehicles and equipment are in good working conditions and that emissions are not excessive.

- Special care must be taken in areas where the route passes close to schools and residential areas.
- The speed of construction vehicles must be reduced.

#### **EMP.8 Fauna**

- Contractor staff may not chase, catch or kill animals encountered during construction.

#### **EMP.9 Fire Prevention and Control**

- Smoking is prohibited in the vicinity of flammable substances.
- The contractor must ensure that fire-fighting equipment is available on site, particularly where flammable substances are being stored or used, and that construction staff are aware of where it is kept and how it is operated.
- Fires started for comfort (warmth) are prohibited, due to the risk of veld fires and risk to adjacent property owner's lands.

#### **EMP.10 Grave Sites**

- Gravesites in close proximity to the road must not be disturbed during construction.

### **EMP.11 Materials Handling and Spills Management**

- Any hazardous materials to be used during construction (e.g. lime, fuel, paint, etc) are to be stored in a designated area at the campsite.
- The storage containers/facilities (including any diesel/petrol tanks) must be placed on an impermeable surface and surrounded by a bund wall, in order to ensure that accidental spillage does not pollute the environment.
- Workers must at all times be made aware of the health and safety risks associated with any hazardous substances used (e.g. smoking near fuel tanks), and must be provided with appropriate protective clothing/equipment in case of spillages or accidents.
- Ensure all staff and contractors undergo relevant training in the maintenance of equipment to prevent the accidental discharge or spill of fuel, oil, lubricants and other chemicals.
- Any spill of potentially hazardous materials must be cleaned up immediately (Potentially hazardous materials on site include paint, oil, grease, fuel, turpentine, etc).
- The area of contaminated soil or spill must be deposited into the hazardous waste container(s).
- The contractor should keep Peat, Sorb or a similar absorbent on site to clean up any spills. The absorbent must be stored in a designated area and be available for inspection.
- All spills are to be recorded in the environmental incident book.

### **EMP.12 Noise**

- Noise generating activities must be restricted to between 07h00 and 17h00 Monday to Friday, unless otherwise approved by the appropriate competent person in consultation with adjacent landowners/affected persons.
- All equipment, vehicles and machinery must be in good working condition and be equipped with sound mufflers if necessary.
- Construction staff must be trained and made aware of not creating unnecessary noise such as hooting and shouting.

### **EMP.13 Pollution Control**

- Soil and water pollution through usage of fuel, oil, paint, bitumen or other hazardous substances must be avoided.
- All construction vehicles are to be maintained in good working order so as to prevent soil or water pollution from oil, fuel or other leaks, and to reduce noise pollution.

#### **EMP.14 Rivers and Streams**

- During construction of bridge structures, there must be no obstruction of the water flow of rivers and streams.
- Excavated material must not be stockpiled on or near riverbanks, in order to prevent sedimentation occurring.
- Erosion control measures must be employed both during and after construction.
- No impediments to natural surface water flow, other than approved erosion control measures, must occur.

#### **EMP.15 Safety**

- Safety measures, such as detour signs, must be implemented during construction to ensure the safety of workers, pedestrians and drivers/passengers in vehicles in the vicinity of construction work.
- Special care must be taken in the vicinity of schools to ensure the safety of children wishing to cross the road under construction.
- The relevant signage (e.g. speed control signs) must be erected alongside the road during the operation phase in order to control traffic.
- Accommodation must be made for pedestrian pathways alongside the road during the construction and operation phases.

#### **EMP.16 Soil Management**

- Stormwater drainage pipes must be installed alongside the road in all areas susceptible to soil erosion.
- Erosion should be minimised by the construction of meadow drains and the planting of indigenous vegetation on the side slopes and drains to reduce flow velocity of stormwater.
- Spoil from cuts may be used in existing erosion galleys.
- Stone pitching and gabions should be constructed at pipe culvert outlets.
- Accidental spills of contaminants onto the ground e.g. oil, concrete, fuel and

chemicals should be removed together with the contaminated soil.

- If necessary an absorbent such as Peat Sorb should be used the aid in cleaning up the spill. The contaminated soil should be disposed of in an appropriate container, depending on its classification.
- Servicing and re-fuelling of vehicles must only be carried out at construction camp.

#### **EMP.17 Worker Conduct**

Code of Conduct for Construction Personnel:

- Do not leave the construction site untidy and strewn with rubbish which will attract animal pests.
- Do not set fires.
- Do not cause any unnecessary, disturbing noise at the construction camp/site or at any designated worker collection/drop off points.
- Do not drive a construction-related vehicle under the influence of alcohol.
- Do not exceed the national speed limits on public roads or exceed the recommended speed limits on the site.
- Do not drive a vehicle which is generating excessive noise or gaseous pollution (noisy vehicles must be reported and repaired as soon as possible).
- Do not litter along the roadsides, including both the public and private roads.
- Do not pollute any water bodies (whether flowing or not).
- No member of the construction team is allowed to enter the areas outside the construction site.

#### **EMP.18 Traffic Disturbances and Diversions**

- Any traffic diversions must be undertaken with the approval of all relevant authorities and in accordance with all relevant legislation.
- Wherever possible, traffic diversion must only take place on existing disturbed areas and remain within the existing road reserve.
- Traffic diversion routes must be rehabilitated after use.

#### **EMP.19 Vegetation**

- Only vegetation falling directly on the route must be removed where necessary.
- Alien vegetation within the road reserve must be eradicated, and management

measures must be implemented for future control of these species.

- Vegetation that has been removed from large areas (e.g. on traffic diversion routes) during construction must be replaced with indigenous vegetation after construction has been completed.

## **EMP.20 Waste Management**

- All general, non-hazardous waste must be placed in a skip container and disposed of at a registered waste disposal site.
- The contractor is to ensure that the portable toilet facilities at the campsite are properly maintained and in working order.
- No disposal, or leakage, of sewage must occur on or near the site.
- All hazardous waste (e.g. oil, paint, empty lime bags, contaminated wash water, etc) must be stored in leakproof containers and disposed of at a registered hazardous waste disposal site.
- The contents of waste storage containers must, under no circumstances, be emptied to the surrounding area. In general, littering, discarding or burying of any materials is not allowed on site or along the route.
- Adequate waste receptacles must be available at strategic points around the construction camp and site for all domestic refuse and to minimise the occurrence of littering.
- Concrete rubble must be collected and disposed of as directed by the Project Manager.
- Each working area must be cleared of litter and building waste (e.g. rubble, wood, concrete packets etc) on completion of the day's work.
- Any spill around the container(s) should be treated as per Section EMP11 and EMP16.

## **SECTION OHS:        OHSA 1993 HEALTH AND SAFETY SPECIFICATION**

### **OHS.1     SCOPE**

This specification covers the health and safety requirements to be met by the Contractor to ensure a continued safe and healthy environment for all workers, employees and subcontractors under his control and for all other persons entering the site of works.

This specification shall be read with the Occupational Health and Safety Act (Act No 85 and amendment Act No 181) 1993, and the corresponding Construction Regulations 2014, and all other safety codes and specifications referred to in the said Construction Regulations.

In terms of the OHSA Agreement in Section C1.2.4 of the Contract document, the status of the Contractor as mandatory to the Employer (client) is that of an employer in his own right, responsible to comply with all provisions of OHSA 1993 and the Construction Regulations 2014.

This safety specification and the Contractor's own Safety Plan as well as the Construction Regulations 2014, shall be displayed on site or made available for inspection by all workers, employees, inspectors and any other persons entering the site of works.

The following are possible risks associated with this project:

- Deep excavations in soils requiring shoring or reducing of slopes
- Blasting of hard rock or demolition of concrete
- Movement of construction vehicles on site, taking into consideration steep slopes, other traffic and existing services
- Exposure to possible injuries due to mishandling or failure of power and hand tools
- Falling debris, tools and materials from bridge
- Non-conformance to specifications with regards to fasteners and materials
- Risks related to general safety and security on site

Additional risks may arise from specific methods of construction selected by the Contractor which are not necessary covered in the above.

### **OHS.2     DEFINITIONS**

For the purpose of this contract the following shall apply:

- (a) **Employer**” where used in the contract documents and in this specification, means the Employer as defined in the General Conditions of Contract and it shall have the exact same meaning as “**client**” as defined in the Construction Regulations 2014. “**Employer**” and “**client**” is therefore interchangeable and shall be read in the context of the relevant document.
- (b) “**Contractor**” wherever used in the contract documents and in this specification, shall have the same meaning as “**Contractor**” as defined in the General Conditions of Contract.

In this specification the terms “**principal contractor**” and “**contractor**” are replaced with “**Contractor**” and “**subcontractor**” respectively.

For the purpose of this contract the **Contractor** will, in terms of OHSA 1993, be the mandatory, without derogating from his status as an employer in his own right.

- (c) “**Engineer**” where used in this specification, means the Engineer as defined in the General Conditions of Contract. In terms of the Construction Regulations the Engineer may act as agent on behalf of the Employer (the client as defined in the Construction Regulations).

### **OHS.3 TENDERS**

The Contractor shall submit the following with his tender:

- (a) a declaration to the effect that he has the competence and necessary resources to carry out the work safely in compliance with the Construction Regulations 2014;
- (b) a declaration to the effect that he made provision in his tender for the cost of the health and safety measures envisaged in the Construction Regulations.
- (c) Failure to submit the foregoing with his tender, will lead to the conclusion that the Contractor will not be able to carry out the work under the contract safely in accordance with the Construction Regulations.

### **OHS.4 NOTIFICATION OF COMMENCEMENT OF CONSTRUCTION WORK**

After award of the contract, but before commencement of construction work, the Contractor shall, in terms of Regulation 3, notify the Provincial Director of the Department of Labour in writing if the following work is involved:

- (a) the demolition of structures and dismantling of fixed plant of height of 3,0m or more;
- (b) the use of explosives;
- (c) construction work that will exceed 30 days or 300 person-days;
- (e) excavation work deeper than 1,0m; or
- (f) working at a height greater than 3,0m above ground or landings.

The notification must be done in the form of the pro forma included under Section 9 (Forms to be Completed by Successful Tenderer) of the tender document.

A copy of the notification form must be kept on site, available for inspection by inspectors, Employer, Engineer, employees and persons on site.

### **OHS.5 RISK ASSESSMENT and SAFETY PLAN**

#### **5.1 Risk assessment**

Before commencement of any construction work during the construction period, the Contractor shall have a risk assessment performed and recorded in writing by a competent person. (Refer Regulation 7 of the Construction Regulations 2014).

The risk assessment shall identify and evaluate the risks and hazards that may be expected during the execution of the work under the contract, and it shall include a documented plan of safe work procedures to mitigate, reduce or control the risks and hazards identified.

The risk assessment shall be available on site for inspection by inspectors, Employer, Engineer, subcontractors, employees, trade unions and health and safety committee members, and must be monitored and reviewed periodically by the Contractor.

## **5.2 Safety Plan**

The Safety Plan will be compiled in order to amongst others address the finding made during the Risk Assessment phase. The Safety plan will be compiled and submitted to the Engineer and Client for Approval. Construction work can only commence upon written approval of the Safety Plan by the Client.

## **OHS.6 APPOINTMENT OF EMPLOYEES AND SUBCONTRACTORS**

### **6.1 Health and Safety plan**

The Contractor shall appoint his employees and any subcontractors to be employed on the contract, in writing, and he shall provide them with a copy of his documented Health and Safety Plan, or relevant sections thereof. The Contractor shall ensure that all subcontractors and employees are committed to the implementation of his Safety Plan.

### **6.2 Health and safety induction training**

The Contractor shall ensure that all employees under his control, including subcontractors and their employees, undergo a health and safety induction training course by a competent person before commencement of construction work. No visitor or other person shall be allowed or permitted to enter the site of the works unless such person has undergone health and safety training pertaining to hazards prevalent on site.

The Contractor shall ensure that every employee on site shall at all times be in possession of proof of the health and safety induction training issued by a competent person prior to commencement of construction work.

## **OHS.7 APPOINTMENT OF SAFETY PERSONNEL**

### **7.1 Construction Supervisor**

The Contractor shall appoint a full-time **Construction Supervisor** with the duty of supervising the performance of the construction work.

He may also have to appoint one or more competent employees to assist the construction supervisor where justified by the scope and complexity of the works.

### **7.2 Construction safety officer**

Taking into consideration the size of the project and the hazards or dangers that can be expected, the Contractor shall appoint in writing a full-time or part-time **Construction Safety Officer** if so decided by the Inspector of the Department of Labour. The Safety Officer shall have the necessary competence and resources to perform his duties diligently.

Provision shall be made by the Contractor in his rates, to cover the cost of this dedicated construction safety officer appointed after award of the contract.

### **7.3 Health and safety representatives**

In terms of **Section 17 and 18 of the Act (OHSA 1993)** the Contractor, being the employer in terms of the Act for the execution of the contract, shall appoint a **health and safety representative** whenever he has more than 20 employees in his employment on the site of the works. The health and safety representative must be selected from employees who are employed in a full-time capacity at a specific workplace.

The number of health and safety representatives for a workplace shall be at least one for every 100 employees.

The function of health and safety representative(s) will be to review the effectiveness of health and safety measures, to identify potential hazards and major incidents, to examine causes of incidents (in collaboration with his employer, the Contractor), to investigate complaints by employees relating to health and safety at work, to make representations to the employer (Contractor) or inspector on general matters affecting the health and safety of employees, to inspect the workplace, plant, machinery etc. on a regular base, to participate in consultations with inspectors and to attend meetings of the health and safety committee.

#### **7.4 Health and safety committee**

In terms of Sections **17 and 18 of the Act (OHSA 1993)** the Contractor (as employer), shall establish one or more **health and safety committee(s)** where there are two or more health and safety representatives at a workplace. The persons selected by the Contractor to serve on the committee shall be designated in writing.

The function of the health and safety committee shall be to hold meetings at regular intervals, but at least once every three months, to review the health and safety measures on the contract, to discuss incidents related to health and safety with the Contractor and the inspector, and to make recommendations regarding health and safety to the Contractor and to keep record of recommendations and reports made by the committee.

#### **7.5 Competent persons**

In accordance with the Construction Regulations the Contractor has to appoint in writing **competent persons** responsible for supervising construction work on each of the following work situations that may be expected on the site of the works.

- (a) Risk assessment and induction training as described in Regulation 7 of the Construction Regulations;
- (b) Fall protection as described in Regulation 8;
- (c) Formwork and support work as described in Regulation 10;
- (f) Excavation work as described in Regulation 11;
- (g) Demolition work as described in Regulation 12;
- (h) Scaffolding work as described in Regulation 14;
- (i) Suspended platform operations as described in Regulation 15;
- (j) Material hoists as described in Regulation 17;
- (k) Batch plant operations as described in Regulation 18;
- (l) Explosive powered tools as described in Regulation 19;
- (m) Cranes as described in Regulation 20;
- (n) Construction vehicle and mobile plant inspections on a daily basis by a competent person as described in Regulation 21(1);
- (o) Control of all temporary electrical installation on the construction site as described in Regulation 22;
- (p) Stacking and storage on construction sites as described in Regulation 26; and

- (q) Inspections of fire equipment as described in Regulation 27.

A competent person may be appointed for more than one part of the construction work with the understanding that the person must be suitably qualified and able to supervise at the same time the construction work on all the work situations for which he has been appointed.

The appointment of competent persons to supervise parts of the construction work does not relieve the Contractor from any of his responsibilities to comply with **all** requirements of the Construction Regulations.

## **OHS.8 RECORDS AND REGISTERS**

In accordance with the Construction Regulations the Contractor is bound to keep records and registers related to health and safety on site for periodic inspection by inspectors, the Engineer, the Employer, trade union officials and subcontractors and employees. The following records and registers must be kept on site and shall be available for inspection at all times.

- (a) A copy of the OHSA 1993 Construction Regulations 2014;
- (b) A copy of this Health and Safety Specification;
- (c) A copy of the Contractor's Health and Safety Plan (Regulation 4);
- (d) A copy of the Notification of Construction Work (Regulation 3);
- (e) A health and safety file in terms of Regulation 5(7) with inputs by the Construction Safety Officer (Regulation 6(7));
- (f) A copy of the risk assessment described in Regulation 7;
- (g) A full protection plan and the corresponding records of evaluation and training of employees working from elevated positions as described in Regulation 8;
- (h) Drawings pertaining to the design of structures (Regulation 9(3)) and formwork and support work structures (Regulation 10(d)) must be kept on site;
- (i) Pronouncement of the safety of excavations must be recorded in a register to be kept on

site (Regulation 11(3)(h));

- (j) A copy of the certificate of the system design for suspended platforms (Regulation 15(3));
- (k) A notice must be affixed around the base towers of material hoists to indicate the maximum mass load, which may be carried at any one time by material hoists (Regulation 7(5));
- (l) Maintenance records of material hoists and inspection results must be kept in a record book to be kept on site (Regulation 17(8));
- (m) A record of any repairs to or maintenance of a batch plant must be kept on site (Regulations 18(9));
- (n) A warning notice must be displayed in a conspicuous manner when and wherever an explosive powered tool is used (Regulation 19(2));
- (o) A register for recording of findings by the competent person appointed to inspect construction vehicles and mobile plant (Regulation 21(1)(j)).

## **OHS.9 CONTRACTORS RESPONSIBILITIES**

For this contract the Contractor will be the mandatory of the Employer (Client), as defined in the Act (OHSA 1993), which means that the Contractor has the status of employer in his own right in respect of the contract. The Contractor is therefore responsible for all the duties and obligations of an employer as set out in the Act (OHSA 1993) and the Construction Regulations 2014.

Before commencement of work under the contract, the Contractor shall enter into an agreement with the Employer (Client) to confirm his status as mandatory (employer) for the contract under consideration.

The Contractor's duties and responsibilities are clearly set out in the Construction Regulations 2014, and are not repeated in detail but some important aspects are highlighted hereafter, without relieving the Contractor of any of his duties and responsibilities in terms of the Construction Regulations.

(a) Contractor's position in relation to the Employer (Client) (Regulation 4)

In accordance with Section 4 of the Regulations, the Contractor shall liaise closely with the Employer or the Engineer on behalf of the Employer, to ensure that all requirements of the Act and the Regulations are met and complied with.

(b) The Principal Contractor and Contractor (Regulation 5)

The Contractor is in terms of the definition in Regulation 2(b) the equivalent of Principle Contractor as defined in the Construction Regulations, and he shall comply with all the provisions of Regulation 5.

Any subcontractors employed by the Contractor must be appointed in writing, setting out the terms of the appointment in respect of health and safety. An independent subcontractor shall however provide and demonstrate to the Contractor a suitable, acceptable and sufficiently documented health and safety plan before commencement of the subcontract. In the absence of such a health and safety plan the subcontractor shall undertake in writing that he will comply with the Contractor's safety plan, the health and safety specifications of the Employer and the Construction Regulations 2014.

(c) Supervision of construction work (Regulation 6)

The Contractor shall appoint the safety and other personnel and employees as required in terms of Regulation 6 and as set out in paragraph 7 above. Appointment of those personnel and employees does not relieve the Contractor from any of the obligations under Regulation 6.

(d) Risk assessment (Regulation 7)

The Contractor shall have the risk assessment made as set out in paragraph 7 above before commencement of the work and it must be available on site for inspection at all times. The Contractor shall consult with the health and safety committee or health and safety representative(s) etc. on a regular basis to ensure that all employees, including subcontractors under his control, are informed and trained by a competent person regarding health hazards and related work procedures.

No subcontractor, employee or visitor shall be allowed to enter the site of works without prior health and safety induction training, all as specified in Regulation 7.

(e) Fall protection (Regulation 8)

Fall protection, if applicable to this contract shall comply in all respects with Regulation 8 of the Construction Regulations.

(f) Structures (Regulation 9)

The Contractor will be liable for all claims arising from collapse or failure of structures if he failed to comply with all the specifications, project specifications and drawings related to the structures, unless it can be proved that such collapse or failure can be attributed to faulty design or insufficient design standards on which the specifications and the drawings are based.

In addition the Contractor shall comply with all aspects of Regulation 9 of the Construction Regulations.

(g) Formwork and support work (Regulation 10)

The Contractor will be responsible for the adequate design of all formwork and support structures by a competent person.

All drawings pertaining to formwork shall be kept on site and all equipment and materials used in formwork, shall be carefully examined and checked for suitability by a competent person.

The provisions of Regulation 10 of the Construction Regulations shall be followed in every detail.

(h) Excavation work (Regulation 11)

It is essential that the Contractor shall follow the instructions and precautions in the Standard Specifications and Project Specifications as well as the provisions of the Construction Regulations to the letter as unsafe excavations can be a major hazard on any construction site. The Contractor shall therefore ensure that all excavation work is carried out under the supervision of a competent person, that inspections are carried out by a Professional Engineer or Technologist, and that all work is done in such a manner that no hazards are created by unsafe excavations and working conditions.

Supervision by a competent person will not relieve the Contractor from any of his duties and responsibilities under Regulation 11 of the Construction Regulations.

(i) Demolition work (Regulation 12)

Whenever demolition work is included in a contract, the Contractor shall comply with all the requirements of Regulation 12 of the Construction Regulations. The fact that a competent person has to be appointed by the Contractor does not relieve the Contractor from any of his responsibilities in respect of safety of demolition work.

(j) Tunneling (Regulation 13)

The Contractor shall comply with Regulation 13 wherever tunneling of any kind is involved.

(k) Scaffolding (Regulation 14)

The Contractor shall ensure that all the provisions of Regulation 14 of the Construction Regulations are complied with. [Note: Reference in the Regulations to “Section 44 of the Act” should read “Section 43 of the Act”].

(l) Suspended platforms (Regulation 15)

Wherever suspended platforms will be necessary on any contract, the Contractor shall ensure that copies of the system design issued by a Professional Engineer are submitted to the Engineer for inspection and approval.

The Contractor shall appoint competent persons as supervisors and competent scaffold erectors, operators and inspectors and ensure that all work related to suspended platforms are done in accordance with Regulation 15 of the Construction Regulations.

(m) Boatswain’s chains (Regulation 16)

Where boatswain’s chains are required on the construction site, the Contractor shall comply with Regulation 16.

(n) Material Hoists (Regulation 17)

Wherever applicable, the Contractor shall comply with the provisions of Regulation 17 to the letter.

(o) Batch plants (Regulation 18)

Wherever applicable, the Contractor shall ensure that all lifting machines, lifting tackle, conveyors, etc. used in the operation of a batch plant shall comply with, and that all operators, supervisors and employees are strictly held to the provisions of Regulation 18. The Contractor shall ensure that the General Safety Regulations (Government Notice R1031 of 30 May 1986), the Driven Machinery Regulations (Government Notice R295 of 26/2/1988) and the Electrical Installation Regulations (Government Notice R2271 of 11/10/1995) are adhered to by all involved.

In terms of the Regulations, records of repairs and maintenance shall be kept on site.

(p) Explosive powered tools (Regulation 19)

The Contractor shall ensure that, wherever explosive-powered tools are required to be used, all safety provisions of Regulation 19 are complied with.

It is especially important that warning notices are displayed and that the issue and return of cartridges and spent cartridges be recorded in a register to be kept on site.

(q) Cranes (Regulation 20)

Wherever the use of tower cranes becomes necessary, the provisions of Regulation 20 shall be complied with.

(r) Construction vehicles And mobile plant (Regulation 21)

The Contractor shall ensure that all construction vehicles and plant are in good working condition and safe for use, and that they are used in accordance with their design and intended use. The vehicles and plant shall only be operated by workers or operators who have received appropriate training, all in accordance with all the requirements of Regulation 21.

All vehicles and plant must be inspected on a daily basis, prior to use, by a competent person and the findings must be recorded in a register to be kept on site.

(s) Electrical installation and machinery on construction sites (Regulation 22)

The Contractor shall comply with the Electrical Installation Regulations (Government Notice R2920 of 23 October 1992) and the Electrical Machinery Regulations (Government Notice R1953 of 12 August 1993). Before commencement of construction, the Contractor shall take adequate steps to ascertain the presence of, and guard against dangers and hazards due to electrical cables and apparatus under, over or on the site.

All temporary electrical installations on the site shall be under the control of a competent person, without relieving the Contractor of his responsibility for the health and safety of all workers and persons on site in terms of Regulation 22.

(t) Use of temporary storage of flammable liquids on construction sites (Regulation 23)

The Contractor shall comply with the provisions of the General Safety Regulations (Government Notice R1031 of 30 May 1986) and all the provisions of Regulation 23 of the Construction Regulations to ensure a safe and hazard-free environment to all workers and other persons on site.

(u) Water environments (Regulation 24)

Where construction work is done over or in close proximity to water, the provisions of Regulation 24 shall apply.

(v) Housekeeping on Construction sites (Regulation 25)

Housekeeping on all construction sites shall be in accordance with the provisions of the environment Regulations for workplaces (Government Notice R2281 of 16 October 1987) and all the provisions of Regulation 25 of the Construction Regulations.

(w) Stacking and storage on construction sites (Regulation 26)

The provisions for the stacking of articles contained in the General Safety Regulations (Government Notice R1031 of 30 May 1986) as well as all the provisions Regulation 26 of the Construction Regulations shall apply.

(x) Fire precautions on construction sites (Regulation 27)

The provisions of the Environmental Regulations for Workplaces (Government Notice R2281 of 16 October 1987) shall apply.

In addition the necessary precautions shall be taken to prevent the incidence of fires, to provide adequate and sufficient fire protection equipment, sirens, escape routes etc. all in accordance with Regulation 27 of the Construction Regulations.

(y) Construction welfare facilities (Regulation 28)

The Contractor shall comply with the construction site provisions as in the Facilities Regulations (Government Notice R1593 of 12 August 1988) and the provisions of Regulation 28 of the Construction Regulations.

(z) Non-compliance with the Construction Regulations 2014

The foregoing is a summary of parts of the Construction Regulations applicable to all construction projects.

The Contractor, as employer for the execution of the contract, shall ensure that all provisions of the Construction Regulations applicable to the contract under consideration are complied with to the letter.

Should the Contractor fail to comply with the provisions of the Regulations 3 to 28 as listed in Regulation 30, he will be guilty of an offence and will be liable, upon conviction, to the fines or imprisonment as set out in Regulation 30.

*The Contractor is advised in his own interest to make a careful study of the Act and the Construction Regulations as ignorance of the Act and the Regulations will not be accepted in any proceedings related to non-conformance to the Act and the Regulations.*

## **OHS.10 MEASUREMENT AND PAYMENT**

### **10.1 Principles**

It is a condition of this contract that Contractors, who submit tenders for this contract, shall make provision in their tenders for the cost of all health and safety measures during the construction process. All associated activities and expenditure are deemed to be included in the Contractor's tendered rates and prices.

#### **(a) Safety personnel**

The Construction Supervisor, the Construction Safety Officer, Health and Safety Representatives, Health and Safety Committee and Competent Persons referred to in clauses 7.1 to 7.5 shall be members of the Contractor's personnel, and no additional payment will be made for the appointment of such safety personnel.

#### **(b) Records and Registers**

The keeping of health and safety-related records and registers as described in 8 is regarded as a normal duty of the Contractor for which no additional payment will be considered, and which is deemed to be included in the Contractor's tendered rates and prices.