

## UPGRADING OF DIPAKAPAKENG ACCESS ROAD AND STORM WATER CONTROL

Situated in  
**ELIAS MOTSOALEDI LOCAL MUNICIPALITY**

### **C3: SCOPE OF WORK**

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All definitions, interpretations and general provisions for the General Conditions of Contract for Construction Work (2015) (3<sup>rd</sup> edition) are applicable.

### **C 3.1 DESCRIPTIONS OF WORKS**

#### **C3.1.1 Client's Objective**

The project objective is to provide an effective, sustainable and a safe traffic and pedestrian travel facility, by upgrading the UPGRADING OF DIPAKAPAKENG ACCESS ROAD AND STORM WATER CONTROL. Upon completion of the project, it would provide an access to social and economic activities, user and communities will be able to conveniently travel to their specific destination e.g. schools, clinic, shops, etc. with ease.

The employer's objectives are to deliver public infrastructure using labour intensive methods where practically possible.

#### **C3.1.2 Overview of the Works**

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

#### **C3.1.3 Extend of the Works**

- Site Establishment.
- Construction of road layer works (approx. 2.5 km long) for both 5,5 wide roads.
- Road Surfaced using 30mm asphalt layer
- Upgrading SANRAL intersection and surfacing with 40mm asphalt later.
- Laying of precast concrete kerbs fig 8c. (approx. 2,5 0km long) (Comply with sans 927:2007 standards).
- Construction of concrete lined storm water channels, with mesh Ref 193 (approx. 1.489km long).
- Installation of traffic calming measures (road signs and speed humps)
- Material and layer testing.
- Finishing of road reserve on completion of the project (Section 5900)
- Clearing of Site on Completion

#### **C3.1.3 Location of the Works**

The site is situated within Dipakapakeng Village, in Groblersdal. Access to the site can be gained off the provincial road.

#### **C3.1.4 Construction program**

It is specifically brought to the notice of the Contractor that time is critical on this project, and the construction period will be a major factor in the award of the tender.

Tenderers shall submit with their tender their **preliminary weekly programme for the construction** of the Works under this contract to suit their proposed method of executing the Works. The programme shall be sufficiently detailed to differentiate between the various activities so that the contract may be properly evaluated.

### **C3.1.5 Change in works**

The Engineer may, from time to time by order in writing without in any way vitiating the Contract or giving to the Contractor any claim for additional payment, require the Contractor to proceed with the execution of the works in such order as in his opinion may be necessary, and may alter the order of or suspend any part of the Works at such time and times as he may deem desirable and the Contractor shall not, after receiving such written order, proceed with work ordered to be suspended until he shall receive a written order to do so from the Engineer. Where the work must of necessity be carried out in conjunction with work of other Contractors, or with that of the Employer, it shall be co-ordinated and arranged in such a manner as to interfere as little as possible with the progress of such other work so as to offer every reasonable facility to other Contractors or to employees of the Employer.

## **C3.2 ENGINEERING**

### **C3.2.1 Design services and activity matrix**

<b>Description</b>	<b>Responsibility</b>
Design of Works	Engineer
Concept, feasibility and overall process	Client
Basic Engineering and detail layouts to tender stage	Engineer
Final Design of Works	Engineer
Final Design to approved for construction stage	Client
Preparation of tender documentation & adverts	Engineer
Appointment of soil test / topographical surveyors	Engineer
Appointment of sub-contractors	Contractor
Supervision	Engineer
Preparation of as-built drawings	Contractor / Engineer
Completion certificate	Engineer / Client / Contractor

### **C3.2.2 Drawings**

The Engineer will provide the Contractor with one full set of drawings, which will be used exclusively for the recording of as built information by the Contractor.

Only dimensions, positions, levels, co-ordinates etc. that change from the original values, will be required to be entered on these drawings. These drawings, fully marked up, will be handed to the Engineer at the issue of the Certificate of completion, which will not be issued until the as-built information has been received.

### **C3.3 PROCUREMENT**

The Tenderer's attention is drawn to the fact that the awarding of this tender will be in terms of the Supply Chain Management Policy of the Elias Motsoaledi Local Municipality and The Standard Conditions of Tender as contained in Annexure F of the July 2015 edition of the CIDB Standard for Uniformity in Construction Procurement.

### **C3.4 SUB-CONTRACTING**

No work may be sub-contracted to another party unless approval is given by the Engineer in liaison with the Client in writing. The Contractor is to submit to the Engineer in writing a request for appointment of a particular sub-contractor. Accompanying this request is to be the full detail of the sub-contractor, including:

- Previous experience
- Work which will be sub-contracted to him/her
- Approximate value of the work to be sub-contracted

Before the Engineer in terms of Clause 49 hereof issues any certificate that includes any payment in respect of work done or goods supplied by any sub-contractor appointed in accordance with the provisions of Clause 6.3 of the General Conditions of Contract for Construction works (2015 3<sup>rd</sup> Edition), he shall be entitled to call upon the Contractor to furnish reasonable proof that all payments (less retention moneys) included in previous certificates in respect of the work or goods of such sub-contractors have been made or discharged by the Contractor, in default of which, unless the Contractor:

- ✓ Informs the Engineer in writing that he has reasonable cause for withholding or refusing such payment; and
- ✓ Submits to the Engineer reasonable proof that he has so informed such sub-contractor in writing.

### **C3.5 CONSTRUCTION**

#### **C3.5.1 Work Specifications**

The following applicable standardized and particular specifications as per COLTO are relevant to this contract:

Section 1200	General Requirements and Provisions
Section 1300	Contractor's Site Establishment on Site and General Obligations
Section 1400	Housing, Offices and Laboratories for the Engineer's Site Personnel
Section 1500	Accommodation of Traffic
Section 1600	Overhaul
Section 1700	Clearing and Grubbing
Section 2100	Drains
Section 2200	Prefabricated Culverts
Section 2300	Concrete Kerbing, Concrete Channelling, and Chutes and Down pipes and Concrete Linings for Open Drains
Section 3100	Borrow Materials

Section 3200	Selection, Stockpiling and Breaking-Down the Material from Borrow Pits, Cutting and Existing Pavement Layers and Placing and Compacting Gravel Layers
Section 3300	Mass Earthworks
Section 3400	Pavement Layers of Gravel Material
Section 3500	Stabilization
Section 3600	Crushed Stone Base
Section 4100	Prime Coat
Section 4200	Asphalt Base and Surfacing
Section 4500	Double Seals
Section 5200	Gabions
Section 5400	Guardrails
Section 5600	Road Signs
Section 5700	Road Markings
Section 5900	Finishing the Road and Road Reserve and Treating Old Roads
Section 8100	Testing Materials and Workmanship

### **C3.5.2 Plant and materials**

All materials shall comply with the requirements of the South African Bureau of Standards, and shall bear the official standardization mark. Where SANS standard does not exist for a certain material, or a material does not bear the official standardization mark, the Engineers approval of such material must be gained before use thereof.

### **C3.5.3 Construction Equipment**

All equipment on site shall be in a good working order, and is to be in such a condition that it can achieve production rates which are typical of the industry standards.

Should any equipment, in the opinion of the Engineer, be substandard or breaks down frequently to such an extent that it affects the progress on the project, the Engineer may instruct the Contractor to replace such equipment.

### **C 3.5.4 Existing Services**

The Contractor shall so carry out all his operations as not to encroach on, or interfere with, trespass on, or damage adjoining lands, building properties, roads, structures, places and things in the vicinity of the Works, and he shall free and relieve the Employer of any liability that may be incurred in consequence of his failure to do so.

The services existing on the site will be either shown on the drawings or pointed out on site by the Engineer and / or the Municipality. No excavation work will commence unless a representative of the Municipality and/or the Engineer have been requested to point out existing services in the area under construction. Written confirmation of services that have been pointed out by the Municipality is to be obtained by the Contractor.

All existing services on the site may not be shown on the drawings or be visible on the site. The

Engineer may order excavation by hand in order to search for and expose services. An item has been included in the Schedule of Quantities to cover the cost of such work if so ordered by the Engineer. Where a service is damaged because of the Contractors negligence he shall be liable for the cost involved in the repair of the services and any other consequent cost that may arise due to the interruption of the damaged services.

No excavation is to take place until a representative from the Municipality has been contacted and he has pointed out the existing services to the Contractor and confirmed it in writing. The same shall apply to all Telkom services in the area.

### **C3.5.5 Site Establishment**

- Source of Water Supply

Water is available from the existing water network in the municipal area and the Contractor is to arrange with the Local Authority for a connection point. The Contractor will be responsible for the costs of the connection as well as the use of water for construction purposes. The Contractor's attention is drawn to the fact that the potable water supply is erratic in this area. Under no circumstances may potable water be used for construction, unless written permission is granted by the Engineer.

- Sources of power supply

Electricity is available from the existing network in the municipal area, and the Contractor is to arrange with the Local Authority for a connection. The Contractor will be responsible for the costs of electricity consumed as well as the connection costs.

- Location of camp and depot

The Engineer shall point out the position of the Contractors camp to the Contractor during the site inspection. The Contractor may assume that the site camp will be within 2 km of the site.

- Sanitary facilities

The Contractor is to provide the necessary sanitary facilities at his camp, all of which will be governed by the requirements of the Local Authority. The contractor shall pay all sanitary fees and charges due.

- Temporary offices

The Contractor is not required to provide any specific office space for the Engineers, but the Contractors' offices shall have adequate space and facilities for the holding of site meetings, and for the Engineer to perform administrative functions on an ad hoc basis.

Neither housing nor shelters will be provided for the contractor's employees, and the Contractor shall make his own arrangements to house his employees and transport them to the Site.

- Laboratory facilities

The use of commercial laboratories will be allowed, but the laboratory to be used is subject to the approval of the Engineer.

- Sanitary facilities

It is not required that specific sanitary facilities be provided for the Engineer, and the facilities for the Contractor will be shared by both parties. The facilities are, however, to be kept in a clean and hygienic condition, to the satisfaction of the Engineer. All sanitary facilities are to conform to the by-laws of the Local Authority.

- Name Boards

One name board shall be provided in positions as ordered by the Engineer. The Engineer will provide the lettering required once the tender is awarded.

- Survey assistant and equipment

The Contractor will be required to make any survey equipment available for the use of the Engineer. The Contractor will also make 2 survey assistants available to the Engineer as and when required, as well as the theodolite and/or level plus accessories.

### **C3.5.6 Site Usage**

- Ground and access to the works

The Contractor shall where necessary on or adjacent to roads which carry traffic; provide all the necessary barricades and signs in accordance with the stipulations of the South African Road Traffic Signs Manual, and in strict accordance with the requirements of the Protective Services of the ELIAS MOTSOLEDI Local Municipality.

The Contractor shall further ensure that all public roads that are used for access to the site are kept free of debris at all times. The Contractor shall also take adequate measures to ensure that dust is kept to an acceptable level. The term acceptable is to be deemed as acceptable to the Engineer.

- Care, damage and protection

The Contractor shall at his own cost make full provision for all watching and lighting necessary for the protection of all persons, animals, vehicles, etc., from injury by reason of the Works. He shall provide ample warning signs, guard rails, etc., around open excavations, stacks of materials, excavated material, debris or the like, and he shall be held liable for all claims made upon himself or upon the Employer by reason of his neglect of all such precautions and provisions.

During the periods of construction of the Works and the repair of defects, the Contractor shall, at

his own cost, to the satisfaction of the Engineer and the relevant Authority, take sufficient and adequate measures to avoid interrupting the use of all roads, footpaths, water courses, drains, pipes, telephones, electric wires and cables, premises, places and works, public or private, which may in any way be interfered with by the operations; and shall also afterwards permanently restore all structures and everything which may have been temporarily displaced or otherwise interfered with, all to the satisfaction of the Engineer and the relevant Authority, without extra charge beyond the Contract price.

▪ Survey beacons

The Contractor shall take care to safeguard any permanent survey beacons such as erf boundary pegs and reference beacons. Should the Contractor disturb any such pegs and beacons, he shall have them replaced at his own cost by a registered Land Surveyor. The Contractor is to provide the Engineer with written confirmation from the Land Surveyor that he has replaced the relevant beacons.

The Contractor's attention is drawn to article 35(i) of the Land Surveying Act No. 9 of 1927 (as amended) in this regard.

▪ Blasting

As the construction takes place within a built-up area, extreme care is to be taken during any blasting operations. No blasting shall be permitted without prior written consent from the Engineer. Written as well as verbal notice will be given to all house owners in the affected area 24 hours prior to the blast being set off, and the contractor is to do a survey of all the houses (internal and external) in the area prior to blasting.

A full daily report of all blasting operations (in duplicate) is to be completed by the Contractor.

This report shall inter alia contain the following information:

- Date and time of each blast
- Number of holes
- Charge per hole
- Use of relays, etc.

This report is to be submitted to the Engineer on a weekly basis, and is to be countersigned by the Engineer.

The contractor is to be noted that he is not to use or permit any person to use an explosive powered tool, unless—

- (a) it is provided with a protective guard around the muzzle end, which effectively confines any flying fragments or particles; and
- (b) the firing mechanism is so designed that the explosive powered tool will not function unless—



- (i) it is held against the surface with a force of at least twice its weight; and
- (ii) the angle of inclination of the barrel to the work surface is not more than 15 degrees from a right angle:

- Protection of existing vegetation

Before any tree is cut down and removed from the site, the Contractor shall confirm the necessity of such action with the Engineer or his Representative.

- Access to individual erven

Access to all public and private property must be maintained at all times. Where trenches cross the access point to any property, the Contractor is to arrange for adequate and safe vehicular and pedestrian crossings over the trenches.

The Engineer must approve the method of providing access before any excavation commences.

- Use of construction vehicles and equipment

The contractor shall ensure that all construction vehicles and mobile plants—

- (a) are of an acceptable design and construction;
- (b) are maintained in a good working order;
- (c) are used in accordance with their design and the intention for which they were designed, having due regard to safety and health;
- (d) are operated by workers who-
  - (i) have received appropriate training and been certified competent and been authorised to operate such machinery; and
  - (ii) are physically and psychologically fit to operate such construction vehicles and mobile plant by being in possession of a medical certificate of fitness;
- (e) arrangements to guard against the dangers relating to the movement of vehicles and plant, in order to ensure their continued safe operation;
- (f) are prevented from falling into excavations, water or any other area lower than the working surface by installing adequate edge protection, which may include guardrails and crash barriers;
- (g) where appropriate, are fitted with structures designed to protect the operator from falling material or from being crushed should the vehicle or mobile plant overturn;
- (h) are equipped with an electrically operated acoustic signalling device and a reversing alarm; and
- (i) are on a daily basis inspected prior to use, by a competent person who has been appointed in writing and the findings of such inspection is recorded in a register.
- (j) no person rides or be required or permitted to ride on any construction vehicle or mobile plant otherwise than in a safe place provided thereon for that

- purpose;
- (k) every construction site is organised in such a way that, as far as is reasonably practicable, pedestrians and vehicles can move safely and without risks to health;
  - (l) the traffic routes are suitable for the persons using them, sufficient in number, in suitable positions and of sufficient size;
  - (m) every traffic route is, where necessary indicated by suitable signs for reasons of health or safety;
  - (n) bulldozers, scrapers, loaders, and other similar mobile plant are, when being repaired or when not in use, fully lowered or blocked with controls in a neutral position, motors stopped and brakes set;
  - (o) whenever visibility conditions warrant additional lighting, all mobile plant are equipped with at least two headlights and two taillights when in operation;
  - (p) when workers are working on or adjacent to public roads, reflective indicators are provided and worn by the workers.

## 3.6 **MANAGEMENT**

### **C3.6.1 Management of the Works**

- Planning and programme

The Contractor shall deliver to the Engineer within **14** days, calculated from the commencement date, a realistic programme showing the order of procedure, the duration of activities making up the programme and method which he proposes to use in carrying out the Works in order to meet the due completion date for this project.

The tenderer is to note that the penalty for failing to complete the works is R **3 500.00** per day.

- Setting out of the works

Generally, the positions of the works have been fixed on the plans according to the existing stand boundaries. The Engineer is to approve all setting out prior to commencement of excavation.

- Excavation of works & safety

The contractor shall ensure that all excavation work is carried out under the supervision of a competent person who is been appointed in writing. The Contractor will evaluate, as far as is reasonably practicable, the stability of the ground before excavation works begin and he/she shall not permit any person to work in an excavation which has not been adequately shored or braced.

The Contractor will cause convenient and safe means of access to every excavation area in which person are required to work and such access hall not be further than 6m from the point where any worker within the excavation is working.

The Contractor must ascertain as far as is reasonably practicable the location and nature of electricity, water, gas or other similar services which may in any way be affected by the work to be performed, and shall before the commencement of excavation work that may affect any such service, take the steps that may be necessary to render the circumstances safe for all persons involved;

The Principal Contractor shall cause every excavation which is accessible to the public or which is adjacent to public roads or thoroughfares, or whereby the safety of persons may be endangered, to be:

- (i) adequately protected by a barrier or fence of at least one metre in height and as close to the excavation as is practicable; and
- (ii) provided with warning illuminants or any other clearly visible boundary indicators at night or when visibility is poor;

The Principal Contractor shall cause warning signs to be positioned next to an excavation within which persons are working or carrying out inspections or tests.

- Inspection by engineer

No stage of construction shall be proceeded with until the Engineer or his representative has examined and approved the previous stage. If any work is covered or hidden from view before the Engineer has inspected same, the Contractor shall at his own cost open the covered work for inspection. The Contractor shall also be responsible for making good any work damaged by such uncovering.

- Employment of local labour

It is a specific criterion of this project that should as far as possible adheres to RDP principles, and to meet these principles the following procedures will be followed:

All labour is to be sourced from the ELIAS MOTSOLEDI Local Municipality and as informed by the "EPWP Recruitment Guideline" published by The Department of Public Works; area of jurisdiction and the Contractor may only bring in key personnel from outside this area.

The rate for appointed labour shall be determined by either

- i. The fixed rate for the appointment of local labour per provision by the Department of Public Works' EPWP rate at the time of works commencement., or
- ii. The fixed rate in line with the provision by the Department of Labour. This will be payable by the Contractor on **fortnightly** basis. The Contractor's attention is drawn to the standard rates specification ("*Annexure A*" – *Civil Engineering Industry Minimum Wage rates per hour; September 2010 to August 2013*) found on the SAFSEC website at [www.safcec.org.za](http://www.safcec.org.za), or
- iii. The fixed rate as determined and defined by ELIAS MOTSOLEDI Local Municipality.

These standard rates shall be implemented for payment of all sourced employees of the

Contractor.

Key personnel would typically include the Contracts Manager, Site Agent, and Supervisor for each discipline and operators of plant where the operator must be seated.

A Monthly labour report on all local labour i.e. payments and labour days should be submitted to the Engineer at the end of each month in order for the Engineer to submit a report to the Employer.

None of the Works shall be executed except between sunrise and sunset on Monday to Saturday, inclusive, of any week, and none of the Works shall be executed on any special non-working days stated in the Contract Data, unless:

- ✓ The Engineer's permission in writing is obtained, subject to such conditions as may be laid down by the Engineer; or
- ✓ Provision is specifically made for it in the Contract; or
- ✓ Work is unavoidable or necessary for the saving of life or property or for the safety of the Works.

▪ Site Meetings

Regular meetings will be held between all relevant parties to establish the progress and / or delays and problems that might occur on site. Any problems of delays will be addressed accordingly and the Contractor will receive proper instructions with reference to this matter.

▪ Communication

The Engineer's representative on this project will be: **Mr Geoffrey Setlhoka**

Contact No: **012) 753 0744**

The contact person for the Employer is: **Mr. Fetakgomo Debeila**

Contact No: **013 262 3056**

▪ Daily Records

Daily records of resources (equipment and people employed) must be kept and must be available on site at all times. These records will include i.e. site instruction book, site diary, site visit register, contractual documentation and minutes of all project meetings. Labour information should be kept updated at all times.

▪ Compliance with applicable laws

The Contractor shall, in performance of the Contract, comply with all applicable laws, regulations and statutory provisions and agreements, and shall in particular, on the request of the Engineer, provide proof that he has complied therewith with regard to amongst others:

- ✓ Wages and conditions of work; and
- ✓ Safety

▪ Payment Certificates

As consideration for the construction, completion and defects correction of the Works, the Employer shall pay the Contractor in terms of the provisions of the Contract.

▪ Clearance of site

On completion of the Works, the Contractor shall clear away and remove from the site all Construction Equipment, surplus materials, rubbish and temporary works of every kind and leave the whole of the site and the works clean and in a safe condition. All streams and watercourses (where applicable) shall be cleaned and restored to the condition as at the commencement of the Works. If the Contractor does not, within a reasonable time, comply with this requirement, the Employer may have the site cleared and recover the cost thereof from the Contractor.

▪ Termination of Contract

If application is made for the sequestration of the Contractor's estate, or if the Contractor publishes a notice of surrender of his estate or presents a petition for the acceptance of the surrender of his estate as insolvent, or makes a compromise with his creditors, or assigns in favour of his creditors, or agrees to carry out the Contract under the supervision of a committee representing his creditors, or (being a company) goes into liquidation, whether provisionally or finally (other than a voluntary liquidation for the purposes of amalgamation or reconstruction), or if the contractor assigns the contract without having first obtained the Employer's consent in writing, or if execution is levied on his goods or if the Engineer certifies reference to this Clause, that in his opinion the Contractor:

- ✓ Has abandoned the contract; or
- ✓ Without reasonable excuse has failed to commence the Works in terms of Clause 10 of the General Conditions of Contract for Construction Works (2015 3rd Edition), or has suspended the progress of the Works for fourteen (14) days after receiving from the Engineer written notice to proceed or
- ✓ Has failed to proceed with the Works with due diligence; or
- ✓ Has failed to remove materials from the site or to pull down and replace work within fourteen (14) days after receiving from the Engineer written notice that the said materials or work have been condemned and rejected by the Engineer in terms of these conditions; or
- ✓ Is not executing the Works in accordance with the Contract, or is neglecting to carry out his obligations under the Contract; or
- ✓ Has, to the detriment of good workmanship or in defiance of the Engineer's instruction to the contrary, sublet any part of the Contract; or
- ✓ Has assigned the Contract or any part thereof without the Employer's consent in writing; or
- ✓ The contractor or anyone on his behalf or in his employ would pay, offer or offer as payment to any person in the employ of the Employer a gratuity or reward or commission; or
- ✓ The contractor furnished inaccurate information in the Schedules forming part of this Contract.

Then the Employer may, after giving fourteen (14) days' notice in writing to the Contractor, terminate the Contract and order the Contractor to vacate the Site and to hand it over to the Employer, and the Employer may then enter upon the site and the Works and expel the Contractor

there from without thereby affecting the rights and powers conferred on the Employer of the Engineer by the Contract, and the Employer may himself complete the Works or may employ another contractor to complete the Works, and the Employer or such other contractor may use for such completion so much of the construction equipment, temporary works and materials bought onto the site by the Contractor as the Employer may think proper, and the Employer may at any time sell any of the said construction equipment, temporary works and unused materials and apply the proceeds of sale toward payment of any sums that may be due or become due to the Employer by the Contractor under the Contract. In such circumstances the Contractor shall forthwith vacate the site and shall not be entitled to remain on the site on the grounds that he is entitled to do so on a right of retention until amounts due to him have been paid, neither will the contractor be entitled to any further payments of this Contract.

### **C3.7 HEALTH AND SAFETY**

- Health & Safety Issues

All work is to be carried out in accordance with the Occupational Health and Safety Act and Regulations (Act 85 of 1993) (a copy of which must be kept on site), the Explosive Material Act of (Act 26 of 1956), the Minerals Act of 1991, and the Factories Machinery and Building Work Act (No 22 of 1941).

The Contractor's notice is drawn to the stipulations of the Construction Regulations 2003, a regulation of the Health and Safety Act 1993 (Gov Notice No R1010 of 18 July 2003). The construction regulation will be applied vigorously on the project.

The Contractor to be appointed must have made provision for the cost of health and safety measures during the construction process. The contractor must have the necessary skills, competencies and resources to carry out the work safely. A proper Safety Plan is to be submitted by the Contractor and a copy thereof is to be made available to all applicable appointed labourers and permanent workers on this project.

The Contractor is to ensure that the legal compliance for the Health and Safety issues are in place. Audits will be carried out to ensure that the Contractor is registered and in good standing with the Workmen's Compensation fund and that the Contractor has affected insurance indemnifying the Employer against penalties levied upon the Employer due to the acts of omissions of the Contractor in failing to comply with the provisions of the OHS regulations 2003. A compliance audit will also be carried out to ensure that the Contractor has appointed a full-time competent person in writing to deal with the issues of the OHS and that a risk assessment has been conducted and a copy of the Safety plan is on site before any work commences.

Operational audits will be carried out on the following important issues:

- ✓ That the Safety Plan is on site at all times
- ✓ That the Contractor's Safety file is on site at all times
- ✓ That the Safety Officer is on site at all times
- ✓ That Safety meetings are conducted as per the Safety Plan
- ✓ That employees are working under safe conditions
- ✓ That the public is not placed in danger
- ✓ That there is no harm to the environment

▪ Accommodation of traffic

It is expected of the Contractor to ensure that the free flow of traffic is possible throughout the construction period.

The Contractor is to provide all necessary barricades, signs and lighting in accordance with the stipulations of the South African Road Signs Traffic Manual, and the Protective Services of the ELIAS MOTSOALEDI Local Municipality. All work is to be to the satisfaction of the Engineer.

▪ Reporting of accidents

In addition to any statutory regulations, the Contractor shall, as soon as practicable, report to the Engineer every occurrence on the Works or the site causing damage to property of injury of death of persons. If required by the Engineer, the Contractor will submit a report in writing to the Engineer within 48 hours of such requirement setting out full details of the occurrence. The Engineer shall have the right to make any enquiries either on the site or elsewhere as to the cause and results any such occurrence and the Contractor shall make available to the Engineer the necessary facilities for carrying out such enquiries.

### **C3.8 PROJECT SPECIFICATIONS**

This project shall be as per COLTO Standard Specifications for Road and Bridge Works for State Authorities 1998 (Green Book)

#### **PSA: 1200 – GENERAL REQUIREMENTS AND PROVISIONS**

##### **PSA 1:1205 WORKMANSHIP AND QUALITY CONTROL**

Add:

All materials shall comply with the requirements of the South African Bureau of Standards, and shall bear the official standardization mark. Where SANS standard does not exist for a certain material, or a material does not bear the official standardization mark, the Engineers approval of such material must be gained before use thereof.

And

It is not required for the Contractor to supply a laboratory for testing materials on site, and he may submit the name and credentials of a local commercial laboratory, for approval by the Engineer if he so requires.

#### **PSAB: 1400 HOUSING, OFFICES AND LABORATORY FOR THE ENGINEER'S SITE PERSONNEL**

##### **PSAB 1 CONTRACTOR'S OFFICE AND STORES**

Neither housing nor shelters will be provided for the contractor's employees, and the Contractor shall make his own arrangements to house his employees and transport them to the Site.

##### **PSAB 2 SURVEY ASSISTANT AND EQUIPMENT**

The Contractor will not be required to make any survey equipment available specifically for the use of the Engineer.

The Contractor will however make 2 survey assistants available to the Engineer as and when required, as well as a theodolite and/or level plus accessories.

##### **PSAB 3 FACILITIES FOR ENGINEER**

No specific offices are required for the Engineer on this contract. The contractor is however expected to have enough space for the holding of site meetings.

#### **PSC: 1700 CLEARING AND GRUBBING**

##### **PSC 1 DISPOSAL OF SURPLUS MATERIAL**

The disposal site is at the discretion of the Contractor but with approval from the Engineer.



**PSDB: 3200     SELECTION, STOCKPILING AND BREAKING-DOWN THE MATERIAL FROM  
BORROW PITS, CUTTINGS AND EXISTING PAVEMENT LAYERS, AND PLACING  
AND COMPACTING THE GRAVEL LAYERS**

**PSDB 1            PRECAUTIONS**

Add the following to 3201:

The Contractor or his agent or representative appointed in writing shall be deemed to be and shall be both the “excavator” and “a person who is competent to pronounce on the safety” of all bracing and shoring as set out in regulation 13 (demolition and excavation) of the General Safety Act No 6 of 1983 as published in the Government Gazette no 10252 Volume 251 page 30 of May 1986 (as amended).

**PSDB 2            PROGRAMMING OF TRENCH EXCAVATION**

The Contractor shall program his works in such a way that excavation and backfilling for all types of trenches will be completed before the construction of the subbase layer.

**PSDB 3            BACKFILLING**

All trenches that cross the roadway will be provided with the material and compacted to the specification as per the original layer works of the road that has been crossed.

**PSDB 4            BEDDING CLASS**

Unless shown otherwise on the drawings all bedding shall be of a class B type for concrete pipes, and bedding for flexible pipes (if utilised) as per section 2200 Clause 2210 of COLTO 2000

**PSDB 5            TRANSPORT FOR EARTHWORKS AND TRENCHES**

Add the following to clause:

- c)        Notwithstanding anything stated to the contrary, the freehaul distance on this contract will be taken as 2,0km.

**PSDB 6            EXCAVATION**

Excavation through surfaced roads is to be carried out in such a way that the edge of the surfacing forms a straight and true line after excavation.

**PSDB 7            BARRICADING AND LIGHTING**

Delete the Subclause and substitute the following:

In terms of the Occupational Health and Safety Act and Regulations (as amended), every excavation that is accessible to the public or that is adjacent to a public road or thoroughfare, or by which the safety of persons may be endangered, shall be

**a) For Excavations Other Than Trenches:**

- i) Adequately protected by a barrier or fence at least one metre high erected as close to the excavation as is practicable; and
- ii) Provided with red warning lights or any other visible boundary indicators at night or when visibility conditions are poor; and
- iii) Inspected by watchmen employed by the Contractor to ensure that barricades and lights are effective at all times.

**b) For Trench Excavations**

- i) Adequately protected by means of at least two horizontal double sided 'red/white' Chevron Tapes approved by the Engineer. The tapes shall be stretched tightly between suitable supports along both sides and ends of the excavation at levels approximately 0,45 m and 1,25 m above the ground. The supports shall consist of poles or iron standards securely planted in solid ground at not more than 10 m centres so as to enclose the spoil and the excavations.
- ii) Provided with red warning light or any other visible boundary indicators at night or when visibility conditions are poor. The spacing between lamps along an open trench shall be not greater than 10 metres. All lamps shall be kept in good order and continuously lit from dusk to dawn and the Contractor shall employ a night watchman to ensure that the lamps remain lit.
- iii) Provided with a sufficient number of steel plates at least 2 m x 1,20 m x 8 mm thick which may be laid across open excavated trenches to provide bridges for vehicles along the route of the work as and where may be considered necessary by the Engineer. The Contractor shall make such plates available on Site at all times.
- iv) Provided with protection for a private vehicular or a pedestrian crossing over an open trench. Such crossings shall be protected on each side by a stout two rail timber fence, at least 1 m high, consisting of 150 mm x 75 mm timber verticals set 0,50 m into the ground, with 75 mm x 50 mm rails securely nailed to them. Where timber is used for bridges, it must be battened underneath to prevent tipping. At least 4 lamps must be provided at each crossing.
- v) Provided with warning barriers in addition to the barricading and light requirements set out above, where construction is in, or across, public roads. The barriers shall comprise 225 mm x 40 mm timbers firmly fixed to heavy supports. The barriers shall be located at least 20 m distance from the obstruction in the directions of all approaching traffic; and the requisite ROAD CLOSED, DEVIATION and other signs shall be prominently displayed well in advance of the work. All such signs and positioning thereof shall comply with the requirements set out in the S.A. Road Traffic Signs Manual.

Where only a portion of the roadway is closed suitable empty drums or pipes painted white shall be placed along the traffic side at distances not more than 20

m apart.

Lamps in good order shall be provided one to each drum or pipe and at least five to each barricade, in addition all poles and warning notices shall be clearly marked by means of approved reflecting material.

- vi) Regularly inspected by watchmen employed by the Contractor to ensure that barricades, bridges, warning barriers and lights are effective at all times.

**PSGA 2300 CONCRETE KERBING, CONCRETE CHANNELLING, CHUTES AND DOWNPIPES, AND CONCRETE LININGS FOR OPEN DRAINS**

**PSGA 1 CEMENT**

Unless written consent to the contrary is received from the Engineer, all cement used on the contract will be Ordinary Portland cement (CEM I 42,5).

**PSGA 2 FINISH**

All exposed concrete surfaces shall be floated off to the necessary gradients and planes, and while still green, will be finished off to a smooth surface with a wooden trowel.

**PSGA 3 STRENGTH CONCRETE**

The strength concrete necessary for the different portions of the work is as follows:

GRADE	ITEM
20/20	Encasement of pipes
20/20	Reinstatement of driveways

Should concrete for the works be mixed on site, the Contractor is to provide the Engineer with a mix design carried out by an approved laboratory for approval. The Contractor is also to furnish the Engineer with the methodology and equipment to be used for the mixing of concrete for approval by the Engineer. Six tests cubes are to be taken prior to the first concrete pour, and the 7-day result will be utilized as a first indication of suitability of the mix design. Approval will however be based on the 28-day strength.

**PSGA 4 SELECTED FILL MATERIAL**

"PI shall not exceeding 10".

**PSGA 5 BEDDING**

All pipes under this Contract will be considered as being flexible pipes.

**PSGA 6 STONE BEDDING**

Where ordered by the Engineer, special drains consisting of a 40 mm thickness of 6mm to

20mm graded stone extending the full width of the trench shall be provided below the bedding to the pipes. The excavation for these drains will be measured in cubic metres at the contract rate applying to unsuitable excavation below the bottom of the trench. The stone filling will be paid for per cubic metre. All measurements in this connection will be to a width equal to the base widths and depths ordered.

**PSGA 7            CONCRETE CASING TO PIPES**

Where concrete encasing is ordered by the Engineer it is to be of grade 20/19 concrete with a minimum thickness of 150 mm above the top of the pipe.

**PSGA 8            VOLUME OF BEDDING MATERIALS**

Add:

- (c)        The volume of bedding material shall be measured nett i.e. the volume of the pipe is to be deducted.

**PSGA 9            FREEHAUL**

The freehaul that applies to selected granular and selected fill material shall be 15km.

### C3.9 PARTICULAR SPECIFICATIONS

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

<b>SECTION EMP</b>	<b>ENVIRONMENTAL MANAGEMENT SPECIFICATION</b>
<b>SECTION DWK</b>	<b>DAY WORKS</b>
<b>SECTION OHS</b>	<b>OHSA 1993 SAFETY SPECIFICATION</b>

#### **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 EMP is bounded to this document under Part C4: **Site Information**. 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. Minimize 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 minimize adverse environmental impact,
- Develop waste management practices based on prevention, minimization, 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 authorizations (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.
- Borrow pits will be fenced and the necessary warning signs will be erected.

#### **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 07:00 and 17:00 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 minimized 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-fueling 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 leak proof 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 minimize 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 DWK: DAY WORKS**

This part of the Project Specifications deals with the provision for Day works in the Schedule of Quantities. Rates for Day works shall be entered in Section 1800 of the Schedule of Quantities in accordance with the following specifications.

### **DWK. 1 SCOPE**

According to clause 37.2 of the General Conditions of Contract for construction works (GCC) 2010 edition, certain work may be carried out using rates tendered in the day work schedule. A schedule of personnel, plant and equipment which may be necessary to perform work on a day work basis is included in the schedule of quantities. The quantities used in the schedule are for tender evaluation purposes only and the use or not of these items shall not constitute a variation in terms of Clause 37 of the General Conditions of Contract 2010 edition.

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

### **DWK. 2 TYPE OF WORK**

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

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

### **DWK. 3 MATERIALS**

Materials for use in works carried out under Day work shall be purchased by the Contractor who shall also arrange for delivery to site, and shall be responsible for any other requirements associated with specific materials. A Provisional Sum has been allowed in Section 1800 for Day work materials. The Contractor shall enter a tendered percentage in the schedule to cover his handling costs and profit, as per other provisional and prime cost sums in this Contract.

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

The Contractor shall submit proof of ownership for any materials used in Day works with his day works claim to the Engineer. Further, if specific materials are required for Day works, quotations will be called for as per Clause 37.2.4 of the General Conditions of Contract 2010 edition.

### **DWK. 4 CONSTRUCTION PLANT HIRE**

Where daywork is ordered, the tendered rates for plant hire in Section 1800 shall be used in calculating the payment due for any plant required to execute the daywork. If no rate is included in the schedule for a particular piece of equipment, and where no other rate or combination of rates would provide suitable compensation, then the daywork method of payment described in Clause 37.2.3 of the General Conditions of Contract 2015 3rd edition will be used.

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

## **DWK. 5 SALARIES AND WAGES OF WORKMEN**

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

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

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

## **DWK. 6 MEASUREMENT AND PAYMENT**

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

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

The Contractor's attention is drawn to the requirements of Sub-clauses 37.2.5 and 37.2.6 of the General Condition of Contract 2010 edition with regard to the submission of day works claims.

## SECTION OHS: OHS 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 OHS 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 OHS 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:

- Working high above the ground on top and below the bridge, most of the time in a restricted environment with limited landings (working platforms)
- Working above a continuously flowing river and in an flood plain environment subject to flooding
- Lifting and lowering of materials and equipment from the ground to the bridge and vice versa, exposed to cross winds
- Steep and restricted access to the lower flood plain below the bridge
- Potentially dangerous existing services, i.e. gas lines, water and sewerage mains, electrical high voltage cables, on the bridge, buried and overhead
- Deep excavations in soils requiring shoring or reducing of slopes
- Blasting of hard rock or demolition of concrete
- High pressure during testing of the relocated pipe lines, which could result in potentially dangerous situations in the event of the pipeline or fittings failing
- Potentially harmful gasses when tying into the existing sewer mains
- 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 documented Health and Safety Plan as stipulated in Regulation 7 of the Construction Regulations. The Safety Plan must be based on the Construction Regulations 2014 and will be subject to approval by the Employer;
- (b) 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;
- (c) 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.
- (d) 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 4, 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**

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 9 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.

## 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 (OHS Act 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 9 of the Construction Regulations;
- (b) Fall protection as described in Regulation 10;
- (c) Excavation work as described in Regulation 13;
- (d) Demolition work as described in Regulation 14;
- (e) Scaffolding work as described in Regulation 16;
- (f) Suspended platform operations as described in Regulation 17;
- (g) Material hoists as described in Regulation 19;
- (h) Bulk Mixing plant operations as described in Regulation 20;
- (i) Explosive actuated fastening device as described in Regulation 21;
- (j) Cranes as described in Regulation 22;
- (k) Construction vehicle and mobile plant inspections on a daily basis by a competent person as described in Regulation 23(1);
- (l) Control of all temporary electrical installation on the construction site as described in Regulation 24;
- (m) Stacking and storage on construction sites as described in Regulation 28; and
- (n) Fire precautions on construction sites as described in Regulation 29.

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 OHS Act 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 7);
- (d) A copy of the Notification of Construction Work (Regulation 4);
- (e) A health and safety file in terms of Regulation 7(1b) with inputs by the Construction Safety Officer (Regulation 8(5));
- (f) A copy of the risk assessment described in Regulation 9;
- (g) A full protection plan and the corresponding records of evaluation and training of employees working from elevated positions as described in Regulation 10;
- (h) Drawings pertaining to the design of structures (Regulation 11(1c)) and temporary works

- (Regulation 10) must be kept on site;
- (i) Pronouncement of the safety of excavations must be recorded in a register to be kept on site (Regulation 13(2)(h));
  - (j) A copy of the certificate of the system design for suspended platforms (Regulation 17(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 11(2));
  - (l) Maintenance records of material hoists and inspection results must be kept in a record book to be kept on site (Regulation 19(8));
  - (m) A record of any repairs to or maintenance of a batch plant must be kept on site (Regulations 19(8));
  - (n) A warning notice must be displayed in a conspicuous manner when and wherever an explosive powered tool is used (Regulation 21(2));
  - (o) A register for recording of findings by the competent person appointed to inspect construction vehicles and mobile plant (Regulation 23(1) (k)).

## **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 5)**

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 7)**

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 7.

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) Management Supervision of construction work (Regulation 8)**

The Contractor shall appoint the safety and other personnel and employees as required in terms of Regulation 8 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 8.

### **(d) Risk assessment for construction works (Regulation 9)**

The Contractor shall have the risk assessment made as set out in paragraph 3 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 9.

(e) Fall protection (Regulation 10)

Fall protection, if applicable to this contract shall comply in all respects with Regulation 10 of the Construction Regulations.

(f) Structures (Regulation 11)

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 11 of the Construction Regulations.

(g) Temporary works (Regulation 12)

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 12 of the Construction Regulations shall be followed in every detail.

(h) Excavation (Regulation 13)

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 13 of the Construction Regulations.

(i) Demolition work (Regulation 14)

Whenever demolition work is included in a contract, the Contractor shall comply with all the requirements of Regulation 14 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 15)

The Contractor shall comply with Regulation 15 wherever tunneling of any kind is involved.

(k) Scaffolding (Regulation 16)

The Contractor shall ensure that all the provisions of Regulation 16 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 17)

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 17 of the Construction Regulations.

(m) Rope Access (Regulation 18)

Where rope access is required on the construction site, the Contractor shall comply with Regulation 18.

(n) Material Hoists (Regulation 19)

Wherever applicable, the Contractor shall comply with the provisions of Regulation 19 to the letter.

(o) Bulk Mixing plants (Regulation 20)

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 20. 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 actuated fastening devices (Regulation 21)

The Contractor shall ensure that, wherever explosive-powered tools are required to be used, all safety provisions of Regulation 21 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 22)

Wherever the use of tower cranes becomes necessary, the provisions of Regulation 22 shall be complied with.

(r) Construction vehicles And mobile plant (Regulation 23)

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 23.

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 24)

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 24.

(t) Use of temporary storage of flammable liquids on construction sites (Regulation 25)

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 25 of the Construction Regulations to ensure a safe and hazard-free environment to all workers and other persons on site.

(u) Water environments (Regulation 26)

Where construction work is done over or in close proximity to water, the provisions of Regulation 26 shall apply.

(v) Housekeeping and general safeguarding on construction sites (Regulation 27)

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 27 of the Construction Regulations.

(w) Stacking and storage on construction sites (Regulation 28)

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 28 of the Construction Regulations shall apply.

(x) Fire precautions on construction sites (Regulation 29)

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 29 of the Construction Regulations.

(y) Construction welfare facilities (Regulation 30)

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 30 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 4 to 30 as listed in Regulation 33, he will be guilty of an offence and will be liable, upon conviction, to the fines or imprisonment as set out in Regulation 33.

***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 9.1 to 9.5 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 in the Contractor's tendered rates and prices.