

**MANDELA BAY DEVELOPMENT AGENCY**

**TENDER NO. MBDA TSP 07/22**

**SAFETY AND PEACE THROUGH URBAN UPGRADING (SPUU)- CONSTRUCTION OF  
HELENVALE PLAY PARK**

**CONTRACT**

**PART 3 (OF 5): SCOPE OF WORK**

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## C3.1 : DESCRIPTION OF THE WORKS

### C3.1.1 EMPLOYER'S OBJECTIVES

The employer's objectives are to complete the Play Park in the Helenvale area. The project objective is to guide the objectives within the Helenvale Precinct Upgrading Programme which was established for poverty alleviation, human resource development, enterprise development, enhancement of capacity of local authorities, economic and social infrastructure and strengthening of crime prevention and reduction strategies and initiatives.

A further objective is to reserve the works for EME's which will be selected independently by the contractor, from Helenvale. The Contractor will be required to provide construction managers to train, supervise and mentor the EME's such that they can successfully complete the works and upgrade their CIDB grading.

### C3.1.2 OVERVIEW OF THE WORKS

This contract constitutes part of the Helenvale Precinct Upgrading Programme and include work elements not completed by the previous contractor.

More specifically this contract entails the completion and betterment of:

Construction of a new park in Extension 12 between Anita and Lanique Drive.

#### EXTENT OF THE WORKS

The Works to be carried out by the Contractor under this Contract comprises mainly the following;

1. Training/Mentoring of the Emerging Contractors with regards to the tendering process
2. Training of the Emerging Contractors with regards to the contract and its implications
3. Training of the Emerging Contractors with regards to planning of the works, sourcing and ordering of materials, monthly measurements and invoicing procedures
4. Training of the Emerging Contractors with regards to Labour Relations, Labour Law and payment of labourers
5. Assist Emerging Contractor with upgrading of CIDB registration

The works to be carried out by the Contractor under this Contract comprise mainly on completing and finishing the following:

#### **Play Park Construction**

- Construction of concrete sidewalk
- Construction of a retainer wall pavilion
- Removal and on rubbish and landscape to concrete works
- Completion of retaining steps and repairing all gabion and reno mattresses

- Laying of clay paving along ally ways
- Raising, lowering and replacing existing manholes
- Architectural works including artwork finish on sidewalks and sculptures

This description of Works is not necessarily complete and shall not limit the work to be carried out by the Contractor under this Contract.

Approximate quantities of each type of works to be executed by the Contractor are further detailed in the Bill of Quantities.

### **C3.1.3 LOCATION OF WORKS**

The site is situated in the existing Helenvale residential area in Port Elizabeth.

Refer to part C4 for Site Information.

Refer to Annexure A for locality plan.

### **C3.1.4 TEMPORARY WORKS**

No temporary works are envisaged in the current design and planned execution of the works except if the Contractor wants to incorporate it as part of his work method. The Contractor's attention is however directed to:

- Locating, dealing with and protection of existing services.
- Dealing with and accommodation of traffic.
- Providing access to erven and properties.

The requirements, principals and responsibilities specified within the various specifications contained under the Contract Part 3: Scope of Works.

#### **C3.1.5.1 Other Services (i.e. Telkom, Electricity, etc.)**

The Contractor shall ensure that the position of all existing services affected by the Works have been verified before construction works commences and should it be necessary to lower or relocate any service, the Contractor will be required to make the necessary arrangements with the relevant service provider and to advise the Employers Agent accordingly.

#### **C3.1.5.2 Survey Beacons and Benchmarks**

The Contractor shall be responsible for the preservation of all land survey, erf or other pegs, benchmarks and beacons. If damage or disturbance of any such pegs or beacons is caused by the operations of the Contractor or his subcontractors, the pegs are to be replaced by a Registered Land Surveyor at the cost of the Contractor. Information regarding the position of all such pegs will be made available to the Contractor by the Employers Agent.

The Contractor is to ensure that no spoil is placed over erf pegs or benchmarks and that these are adequately protected for the full duration of the Contract.

Where disturbances of boundary pegs is unavoidable due to excavation or other operations adjacent to the pegs, the Contractor shall advise the Employers Agent or his Representative immediately, and agreement is to be reached that the disturbance of the peg is unavoidable and a strict record of such disturbed pegs is to be kept. Such pegs are to be replaced by a Registered Land Surveyor as described above and the Contractor is to submit proof of the cost of replacement of pegs. The Contractor will be reimbursed on a basis pro-rata to the total cost of peg replacement determined on completion of the Works.

#### **C3.1.5.3 Protection of Existing Works**

The Contractor shall take all necessary steps to ascertain the location of existing services before commencing any section of the works and shall exercise the greatest care when working in the vicinity of such services. No more than three weeks and not less than one week before commencing his operations in any particular area, the Contractor shall request in writing from the Employers Agent the latest available drawings showing the location of services already installed. The Contractor will also be responsible for contacting the various service providers, arranging a meeting and verifying all known as well as possible unknown services on site.

The Contractor shall take all necessary steps to protect any existing works whatsoever against damage which may arise as a result of his operations on Site. The Contractor shall bear the cost of the repair of damage to any service, the possible existence of which could reasonably have been ascertained by him in good time.

Where the Contractor is responsible for damage for which repairs have to be carried out by the Employer or an outside Authority, the costs of these repairs will be recovered by means of a deduction from the Contractor's monthly Payment Certificate. The Employer will attend to the payment of monies due to outside authorities, should the Contractor not make direct payment, to the outside authorities, timeously.

#### **C3.1.5.4 Tidying up of the Works**

The Contractor shall take note that progressive and systematic finishing and tidying will form an essential part of this contract. On no account shall spoil, rubble, materials, equipment or unfinished operations be allowed to accumulate in such a manner as to unnecessarily be a hindrance to or impede the activities of other contractors or service providers. In the event of this occurring, the Employer shall have the right to withhold payment for as long as may be necessary in respect of the relevant works in the area(s) concerned.

Upon completion of the Works or any portion thereof, the ground, fences, gates and any structures that have been interfered with are to be carefully restored to their original condition and all rubbish, tools, tackle, plant and material must be removed so as to leave the Site in a clean and orderly condition. No additional payment shall be made for work set out above.

### **C3.1.1 TEMPORARY WORKS**

#### **C3.1.6.1 EXISTING SERVICES**

The Contractor shall ensure that the position of all existing services affected by the works have been verified before construction works commences. The Contractor shall take all necessary steps to ascertain the location of existing services before commencing any portion of the Works and shall exercise the greatest care when working in the vicinity of such services.

Should it be necessary to lower or relocate a service, the Contractor will be required to make the necessary arrangements with the relevant service provider and to inform the engineer accordingly.

#### **C3.1.6.2 PROVIDING ACCESS TO BUILDINGS AND FACILITIES**

Access to properties, buildings and businesses must be provided by the contractor at all times. The Contractor shall at his own expense provide suitable crossings for pedestrians to maintain such access. Such temporary access shall be in the form of portable bridges, temporary backfill or other approved means and shall allow for the safe passage of pedestrians and goods at all times. The Contractor shall be responsible for maintaining such crossings and removing the same when they are no longer required.

No separate payment shall be made for providing access to buildings, businesses and public facilities and the costs of this, is deemed to be included within the appropriate work rates.

The full extent of all areas in which plant and personnel are operating shall be at all times be clearly demarked and barricaded to prevent access by members of the public.

## C3.2 : ENGINEERING

### C3.2.1 DESIGN SERVICES AND ACTIVITY MATRIX

The responsibility for the design of the works is set out below:

Concept, feasibility and overall process	Employer
Basic engineering and detail layout to tender stage	Employer
Final design of civil works for construction stage	Employer
Temporary works	Contractor
Preparation of as-built drawings (Marked up Employers Agent drawings)	Contractor

- *The Employer is responsible for the design of the Permanent Works as reflected in the Contract Documents, unless otherwise stated.*
- *The Contractor is responsible for the design of all the Temporary Works, including traffic and pedestrian accommodation, and their compatibility with the Permanent Works.*
- *The Contractor shall supply all details necessary to assist the Engineer in the compilation of the As-Built Drawings.*

### C3.2.2 DESIGN BRIEF

The Contractor is responsible for the design of all temporary works required for the construction of the permanent works – all to the approval of the Employers Agent and Employer before the award of the tender.

### C3.2.3 DESIGN PROCEDURES

Where drawings of the structures have been prepared by the Employer's Agent, the Contractor shall base their drawings on the Employers Agents drawings and shall check that their equipment fits into and can operate satisfactorily within the structures shown on the Employers Agents drawings. Drawings, dimensions and details of existing infrastructure and equipment are supplied to the Contractor in good faith, however, the Contractor shall base the design of their infrastructure and equipment on actual dimensions and details measured/recorded on Site by them and approved by the Employers Agent. Any inconsistencies, including any conflict between the Employers Agents drawings and the actual dimensions measured on site, shall immediately be drawn to the attention of the Employers Agent, in writing.

Note that all designs are subject to the approval of the Employers Agent, this does not relieve the Contractor of his design responsibility nor accountability. The professional responsibility for such design shall remain with the Contractor and his design Employers Agent.

The Contractor shall take all statutory requirements, as well as the Site Specific Health and Safety Specification and Basic Risk Assessment (refer to annexure C and D) into consideration when designing the Temporary Works.

The Contractor shall record all construction data to enable the Employers Agent to compile the 'As-built' plans at the end of the contract.

The above summary is not necessarily complete and shall not limit the work to be carried out.

#### **C3.2.4 DRAWINGS**

**The drawings relating to this tender shall be provided in the tender document.**

*Any ambiguities shall be clarified by the Tenderer with the Employers Agent prior to the submission of Tenders.* The drawings listed below have been prepared by the Employers Agents on behalf of the Employer and are attached in order to give an overview of the project. They are issued to tenderers for pricing purposes and are not construction drawings.

The Nelson Mandela Bay Municipality Standard Infrastructure Details (July 2007) also apply to this contract – these details are available for purchase from the Information Centre, Ground Floor, Lillian Diedericks Building, Govan Mbeki Avenue.

Additional construction drawings will, in terms of Clause 5.9 of the General Conditions of Contract (2015), will be issued to the Contractor by the Employers Agent/Employer on the commencement date and from time to time as required. The contractor will be supplied with 3 sets of unreduced paper prints of each drawing free of charge. Any additional prints required will be for the account of the Contractor.

The Contractor shall conform in all aspects to the drawings and specifications and to any written instructions, which the Employers Agent or his representative may provide him with during the contract. Should any difference or contradictions exist in the documents or dimensions used in the documents, the Contractor shall be responsible to obtain clarification, thereof from the Employers Agent. Such clarification shall be in writing and shall be final and binding.

Should the Contractor fail to seek clarification of any differences or contradictions, the Contractor shall be solely liable for any costs that may arise due to his failure in this regard.

The Employers Agents drawings included in this tender document are indicative, conceptual, generic drawings and do not pertain to any particular supplier or manufacturer.

Only figured dimensions may be used, and the drawings shall not be scaled unless the Contractor is so instructed by the Employers Agents in writing. The Employers Agents will upon written request provide any dimensions that may have been omitted from the drawings.

It is the Contractor's responsibility to ensure that work is carried out in accordance with the latest revision of the construction drawings.

##### **C3.2.4.1 Record Drawings ('As-built')**

The Contractor shall mark up on drawings provided to him for this purpose the exact positions and details of all infrastructures, pipelines and the like constructed under this contract. The marked up drawings shall be handed to the Employers Agent monthly as the work progress. The Certificate of Completion shall not be issued before the Employers Agent is in receipt of all marked up drawings and other as-built information.

### **C3.2.5 CONSTRUCTION METHODS**

Construction methods used shall be environmentally friendly as far as possible. No construction methods that will result in long term or permanent damage to the surrounding natural environment shall be allowed.

Care shall be taken when mixing, transporting and placing concrete to avoid spillage and wastage.

The Contractor is responsible for the design of all the Temporary Works required for the construction and execution of the Permanent Works. This includes, inter alia, temporary roads, access control, accommodation of traffic, shoring of trenches and excavations, dewatering, all health and safety measures as well as temporary support systems, until the completion of the Contract.

Highlighted below are the following:

- a) Trench support / shoring systems.
- b) Fall protection and safety when working in high areas.
- c) Traffic accommodation and signage according to the South African Development Community's South African Road Traffic Signs Manual, Volume 2 – Chapter 13, Roadworks Signing.
- d) Traffic and pedestrian barricades, signage, lighting and delineation and safety measures during construction.
- e) Record keeping and recording of As Built data for the Engineer.

The above description is not necessarily complete and shall not limit the work to be carried out.

All construction work shall be undertaken in accordance with the Occupational Health and Safety Act and Construction Regulations.

- f) The Contractor shall provide sufficient specialised security services for the protection of both his/her staff and the works, taking cognisance of the dangerous nature and the impact of gang activities in the area during the construction period.

### **C3.2.6 SERVICES KNOWN TO BE IN THE VICINITY OF THE WORKS SITE**

Many known services cross the site of the works. These are shown on the drawings as far as possible. Before any work commences the exact positions of all services must be located and the services identified, marked and recorded on plan for inclusion in the as-built drawing.

Items have been allowed in the Bill of Quantities for dealing with and protecting existing services where they are known.

The Contractor, shall however, ensure that prior to construction all the necessary Record Drawings and Wayleaves for all services have been obtained and verified on site by the relevant service providers in his presence. The Contractor must request in writing the relevant official to indicate the said services within 48 hours prior to the commencement of the work, after which the responsibility rests with the service department if the services are not indicated to the Contractor as requested.



The Contractor shall take whatever extra precautions are required to protect all existing services from damage during the period of the Contract. Any damage to existing services indicated by the relevant service providers or other damage as a result thereof, shall be for the Contractors account.

The Contractor shall conduct his / her own research from reliable sources regarding gang activities in the project area. The Contractor shall thereafter conduct an issue-based Risk Assessment from which he/she will formulate a mitigating strategy for the protection of his/her workers.

Taking Sections 39 and 42 of the Project Relevant Health & Safety Specification into account and his / her own Hazard Identification and Risk Assessment, the Contractor shall provide workers with the necessary information, training and protection to prevent and/or avoid workers falling victim to gangsters and their activities.

The Contractor shall therefore make the necessary provision for specialized security services for the protection of staff from an adverse impact or worse resulting from gangsterism and related activities.

## C3.3 : PROCUREMENT

### C3.3.1 SUBCONTRACTING: PORTION OF WORKS RESERVED FOR EME's SUBCONTRACTORS

This specification covers the requirements of the Employer for the use and development of EME's as subcontractors on civil engineering projects.

#### C3.3.1.1 DEFINITIONS

For the purposes of the Scope of Works, the definitions given in the General Conditions of Contract for Construction Works (2015), the Standard Specifications and the Scope of Works, together with the following additional definitions shall apply:

- a) **"Contract"** shall have the meaning assigned thereto in Clause 1.1.1.7 of the General Conditions of Contract for Construction Works (2015).
- b) **"Contractor"** shall have the meaning assigned thereto in Clause 1.1.1.9 of the General Conditions of Contract for Construction Works (2015).
- c) **"Main Contract"**: shall mean the contract entered into between the Employer, who is the Nelson Mandela Bay Metropolitan Municipality, and the Contractor.
- d) **"EME's Subcontract"** shall mean the contract entered into between the Contractor and any EME subcontractor.
- e) **"EME Work Package"** shall mean that portion of the Works which shall be set aside for construction by an EME.
- f) **"Exempted Micro Enterprise (EME)"** shall mean an enterprise with annual total revenue of R5 million or less. The company or economic activity that is owned by black person(s) and where there is a substantial management control by black people.

### C3.3.2 SUBCONTRACTING

#### C3.3.2.1 Scope of mandatory subcontract works

A major objective of the targeted procurement procedure is to extend **ECONOMIC** and **DEVELOPMENTAL** opportunities to Micro Enterprises (SMME's) in the execution of the project.

It is an express condition of this Contract, that the Mandela Bay Development Agency enforce that a minimum of 30% of the construction works (excluding VAT, contingency and Main Contractors P&G's), must be subcontracted to Micro Enterprises (SMME's) as set out in C3.3 from Helenvale. The Micro Enterprises (SMME's) must be registered in the correct CIDB grading's, for the appropriate type and value of the subcontracted works.

Further, the Contractor will provide the apportionment of packages totalling the 30% required.

Notwithstanding the normal requirements of Government for an enterprise to be acknowledged and categorised as an Micro Enterprise as indicated below, the MBDA further requests the Tenderer to ensure that the Micro Enterprises he intends Sub Contracting with also complies with the following seven criteria:

- Must have a valid Tax Clearance Certificate
- Must have a valid CIDB registration in the appropriate category and value range for the anticipated scope of work.
- Must be registered on the Central Supplier (CSD)
- Must be 100% Black owned
- Must have an accountants letter that indicates BBBEE Status or BBBEE Certificate from an institution accredited by SANAS or IRBA or an Micro Enterprise Affidavit

The scope of the work to be subcontracted is the prerogative of the Tenderer.

The contractual relationship between the Contractor and any of the Subcontractors / Micro Enterprises (SMME's) shall be the same as if the Contractor had appointed these subcontractors in terms of Clause 4.4.4 of the Conditions of Contract. The Contractor shall take full responsibility for these subcontractors.

The following shall further apply for Specialist Subcontractors :

**a) Specialist Subcontractors:**

The following portion of the Works may be subcontracted to a specialist subcontractors registered in the appropriate work category as per CIDB requirements:

- The supply and installation of the electrical reticulation and lighting.

**b) Micro Enterprise Subcontractors (Generally known as SMME's):**

This section provides the specifications that relate to the contractor's implementation of the policies and initiatives of the Government, community participation, and employment of Micro Enterprises (ME's). These specifications should be read in conjunction with the various statutes and legislation that relate to small businesses and Broad-Based Black Economic Empowerment.

In this regard all tenders will be considered with specific reference to applicable legislation in force from time to time and which are specifically applicable to organs of state for example the following:-

- (i) The Constitution of the Republic of South Africa, 1993;
- (ii) Public Finance Management Act, 1999 (Act No 1 of 1999);
- (iii) Preferential Procurement Policy Framework Act, 2000 (Act No 5 of 2000);
- (iv) Broad-Based Black Economic Empowerment Act, 2003 (Act No 53 of 2003);
- (v) Construction Industry Development Board Act, 2000 (Act No 38 of 2000) and Regulations; and
- (vi) National Small Business Amendment Act, 2003 (Act No 26 of 2003).

**Micro Enterprise (ME):** a separate and distinct business entity, including cooperative enterprises and non-governmental organisations, managed by one owner or more, including its branches or subsidiaries, if any, and is registered with the South African Revenue Service, and which can be classified as a micro enterprise by satisfying the size variation criteria according to the type of enterprise in the table below

<b>TABLE 15001a: SMME SUPPLIERS AND OTHER SERVICE PROVIDERS *</b>				
<b>Size</b>	<b>Total Full-time Equivalent of Paid Employees</b>	<b>Total Annual Turnover</b>	<b>Total Gross Asset Value (fixed property excluded)</b>	<b>CIDB Grading</b>
	<i>less than</i>	<i>less than</i>	<i>less than</i>	
Medium	200	R26 m	R5 m	7
Small	50	R6 m	R1 m	5 & 6
Micro	5	R0.2 m	R0.1 m	1 to 4

\* In terms of the National Small Business Amendment Act, 2003 (Act No 26 of 2003)

**It should be noted that only one work package may be subcontracted to one specific Subcontractor.**

**C3.3.2.2 Preferred subcontractors / suppliers**

None.

**C3.3.2.3 Subcontracting procedures**

**a) General:**

All subcontractors (Micro Enterprises – smme's) shall be appointed by the Contractor and the contents and requirements of Clause 4.4 of the Conditions of Contract shall apply in full.

The Contractor shall appoint all subcontractors (Micro Enterprises – smme's) using the latest and applicable SAFCEC General Conditions of Subcontract.

Subcontractors (Micro Enterprises – smme's) shall comply in full, to all aspects of the Conditions of Contract and the Contractor's attention is drawn to the contents of Clause 4.4 of the Conditions of Contract.

**b) Subcontract agreements with the Subcontractors / Micro Enterprises (SMME's):**

**c) Subcontract agreements with the Subcontractors / Micro Enterprises (SMME's):**

**At tender award stage**, the Contractor will submit the signed subcontract agreements which will include the **scope of works for each subcontractor**, as well as **agreed rates**.

It must be further noted, that the subcontractor must be registered with the Construction Industry Development Board, in the relevant category, according to the estimated value of the work package, as well as the seven conditions set out in C 3.3.2.1.

All the Conditions of Tender, as they have applied to the Contract, shall apply where relevant, to the various subcontracts.

The Contract Data in the associated subcontract documents shall be based on the latest SAFCEC General Conditions of Subcontract, with minimal project specific variations and amendments that do not change their intended usage.

The Specific Provisions and Conditions of the subcontracts must however allow for the following amendments and variations to the Standard General Conditions of Subcontract:

- Clause 5: Subcontract Sureties – The Subcontract shall be drafted to allow the omission and requirement for sureties and performance bonds.
- Clause 6: Insurances – The Subcontract shall be drafted to allow the omission of insurances and to specify that such responsibility remain with the Contractor.
- Clause 10: Penalty for Delay – The Subcontract shall be drafted to specify that the Contractor shall issue and give written notice and warning to the Subcontractor prior to any penalties being deducted.
- Clause 12: Valuations and Payments – The Subcontract shall be drafted to allow the Subcontractor to submit bi-weekly statements.
- Clause 12: Valuations and Payments – The Subcontract shall be drafted to specify that the Contractor shall pay the Subcontractor by the 7<sup>th</sup> working day or within two working days of the Contractor receiving his payment for such work, whichever is the sooner.

Notwithstanding the above, the Subcontract will also make allowance that all CIDB registered 1 & 2 Micro Enterprise (SMME's) Subcontractors must be paid in 14 days from the date of their certificate submission, irrespective whether the Main Contractor has been paid or not.

- Clause 12: Valuations and Payments – The Subcontract shall be drafted to allow the Contractor to deduct retention only from the Subcontractor's penultimate statement.

The subsequent Conditions of Subcontract Agreement shall be in accordance with the Conditions of Contract for Construction Works (2010). The Subcontract shall also specify:

- (i) the terms and conditions relating to the recruitment, employment and remuneration of workers engaged on the subcontract works; and
- (ii) details of any training to be provided to the temporary workforce.

The Contractor shall at all times remain responsible for providing the subcontracted portion of the Works as if the work had not been subcontracted.

#### **C3.3.2.4 Attendance on Subcontractors / Micro Enterprises (SMME's)**

The Contractor shall, in addition to the requirements of Clause 4.4 of the Conditions of Contract guide, assist and mentor all the Micro Enterprise Subcontractors (SMME's) in all states regarding the execution of the works.

The Contractor shall be responsible for ensuring that the Subcontractors fully comprehend the:

- Implications of the liabilities and responsibilities inherent in the subcontract into which the tenderer proposes entering.
- Implications of the tendered rates.
- Scope and extent of the Works included in the Subcontract.
- Proper procedures for the submission of the tender.
- Procedures and basis on which tenders will be evaluated and the Subcontract awarded.

The Contractor shall closely manage, mentor, supervise, guide and assist each Micro Enterprise Subcontractor (SMME's) in all aspects of management, planning, execution and the completion of each Subcontract.

The above shall include inter alia, but is not limited to, the following:

- (i) Planning and programming of the Works.
- (ii) The sourcing, ordering, purchasing, hiring all the necessary Construction Equipment, Materials, tools and accidentals necessary and required for the successful execution and completion of the Permanent as well as the Temporary Works.
- (iii) Labour relations and employment.
- (iv) Monthly measurements, costing and invoicing.
- (v) General safety, occupational health and safety matters.
- (vi) Functions of civil engineering infrastructure, structures, services and systems.
- (vii) Interpreting and understanding the contract and subcontract.
- (viii) Construction and maintenance methods and procedures.
- (ix) Communication.
- (x) Cash-flow control, submitting invoices and payment certificates.
- (xi) Planning, programming, scheduling, critical path control and acceleration.
- (xii) Maintenance planning.
- (xiii) Material procurement and control.
- (xiv) Risk limitation and management.
- (xv) Quality assurance and procedures.
- (xvi) Compliances with all applicable laws, regulations, statutory provisions and agreements.
- (xvii) General Conditions of Contract and Contract Data.
- (xviii) Contractual claims, if situations arise that entitle a contractor to claims in terms of the Conditions of Contract.
- (xix) Profit and loss.
- (xx) Replacement and running costs of Construction Equipment.

The extent and level of management, mentorship, supervision, guidance and assistance to be provided by the Contractor shall be in **commensuration with the expertise** of the **relevant subcontractor** and should be so directed as to enable the subcontractors to achieve the successful execution and completion of the respective Subcontracts.

The Contractor attention is further directed to Clause C3.5: Management under the Scope of Work.

**C3.3.2.5 Quality of work and performance of the subcontractor / Micro Enterprise (SMME)**

- (a) The Contractor shall closely monitor and supervise all subcontractors / Micro Enterprise's (SMME's) and shall guide and assist each subcontractor in all aspects of management, execution and completion of his subcontract. This shall typically include assistance with planning of the works, sourcing and ordering of materials, labour relations, monthly measurements and invoicing procedures. The extent and level of such guidance and assistance, to be provided by the Contractor shall be commensurate with the basic level of subcontract applicable and shall be directed at enabling the subcontractor to achieve the successful execution and completion of his subcontract.
- (b) The Contractor shall give reasonable warning to the subcontractors when any contravention of the terms and conditions of the subcontract has occurred or appears likely to occur. The Contractor shall, whenever feasible, give the subcontractor reasonable opportunity to make good any such contravention or to avoid such contravention and shall render all reasonable assistance to the subcontractor in this regard.

**C3.3.2.6 Payment of CIDB Registered 1 CE Micro Enterprises (SMME's) within 14 days**

It is an express condition of the project that the Main Contractor pay all his CIDB REGISTERED 1 Micro Enterprise Subcontractors within 14 days of the Micro Enterprise submitting their invoice of work done. Should there be a discrepancy between the value of the certificate submitted by the Micro Enterprise and the value calculated by the Main Contractor, the Micro Enterprise will be paid the amount determined by the Main Contractor, all still within 14 days.

A meeting with the Client, Engineer, Main Contractor and Micro Enterprise may then be called to discuss and resolve the differences.

**C3.3.2.7 Provision of Bridging Finance to CIDB Registered 1 CE Micro Enterprise Contractors (SMME's)**

The Main Contractor will make “**bridging finance**” available to the Micro Enterprise's (only CIDB grade 1), to a maximum of 20% of the package value, to act as start-up capital or to assist in purchasing materials and small items of plant, eg. Compactors, mixers, hand tool etc.

The amount of bridging finance provided to the Micro Enterprise will be re-paid in instalments as agreed to and set out in the Sub Contract agreement, between the two parties.

**C3.3.2.8 Provisional Allowance for Preliminary and General items for Micro Enterprise Contractors (EME / SMME's)**

A Provisional Sum has been allowed for to cover the Preliminary and General (P&G) items for when the EME Subcontractors are engaged after the Contractor has been appointed.

#### **C3.3.2.9 Mark Up for Management of Micro Enterprises (SMME's) %**

The percentage Mark Up tendered on the value of the Micro Enterprises work shall include full compensation for all guidance, supervision, mentoring, setting out and monitoring activities that may be deemed necessary to ensure the Works carried out by EMEs are in accordance with the technical and OHS specifications and within the agreed timeframes. The percentage mark-up has been allowed to cover all the Contractor's additional costs such as, overheads, finance costs, risk, profit and all other requirements of Section C3.3 on the work conducted by the SMME's in order to achieve the 100% participation goal, as well as to cover all the requirements as set out and stipulated in Clause 4.4 of the GCC (2015), and in accordance with section C3.3.

The payment will be made on a monthly basis, based on the actual certificate value of the ME, for the said month as certified by the Engineer

#### **C3.3.2.10 Penalty Calculation Use of Micro Enterprises (SMME's)**

Should the contractor fail to meet the minimum requirement of subletting at least 100% of the Contract value to SMME's (emerging sub contractors), a penalty of 1,2 \* the value of the amount to be sublet, minus the actual value sublet, will be implemented. This amount will be deducted from the Contractor's payment certificate.

The Contractor is to indicate to the MBDA via a report certified by their auditors indicating that at least 100% of the Construction Works value has been paid to SMME's at the end of the Contract before the retention money is released.

### **FEATURES REQUIRING SPECIAL ATTENTION REGARDING USE OF LOCAL LABOUR**

#### **C3.3.3.1 LOCAL LABOUR SPECIAL REQUIREMENTS**

The Tenderer's attention is drawn to the following requirements which will form part of his responsibility and which he needs to take into consideration in his tender price regarding the use of Local Labour :

- **Create a minimum of 10 job opportunities on site for the duration of the contract period.**

The ratio of local labour employed on the project must conform to the following:

- **Women** are to make up at least **20%** of the **Total Local Labour** employed on this project with an emphasis on "*Women who are the single head of households and have dependants*".
- **Youth** are required to make up at least **40%** of the **Total Local Labour** employed (Persons above school going age of 18 to 35 years old).
- **Men** are required to make the balance of the **Total Local Labour** employed (Over the age of 35 years).

#### **C3.3.3.2 LABOUR INTENSIVE WORK**

##### **Guiding Principle**

The guiding principles upon which the labour intensive work to be provided is based, include:-



- creating sustainable job opportunities,
- poverty alleviation,
- local authority empowerment, and
- ensuring financial accountability

In line with the above, the following targets have been set in order to reach objectives and this Contract will be subject to these targets:

The Contractor shall therefore be required to plan his activities to maximise the use of local labour. A “local Labour / worker” (this excludes the Micro Enterprise workers and the Contractors Permanent Employees) is defined as a person whose domicilium citandi ex executandi is in Helenvale, in Port Elizabeth. The rates tendered shall cover the full cost of the all labour intensive work.

The following activities are the minimum to be carried out by local labour:

- All trench excavation, except when rock is encountered.
- Bedding and backfilling
- Laying of pipes
- Brick work
- Laying paving
- Locating existing services
- Pouring concrete
- Erecting shuttering
- Constructing manhole chambers
- Laying of kerbs
- Planting trees and plants
- Installation of the irrigation system

The use of mechanical equipment will therefore be limited to the following:

- Construction of the roads, parking areas and associated layer works.
- Compaction of bedding and blanket layers.
- Cutting of premix & Concrete
- Transport of material to and from site.

Furthermore, the Tenderer is required to allow for the use of local labour in his planning and programme in order to achieve the employment targets. The Contractor shall be expected to limit the use of non-local persons to his permanent core of key personnel only. The table attached should also be completed in full for tender purposes.

### **C3.3.3.3 LIMITED TECHNICAL TRAINING – LOCAL LABOUR**

The Contractor shall be responsible for providing limited accredited technical training to local labour employed on the project (eg. 2 day on site courses – paving, kerb laying etc). The Contractor shall facilitate initial training sessions as approved by the Engineer. An accredited trainer shall present all training sessions.

#### **C3.3.3.4 BASIC METHOD REQUIREMENT: TRAINING OF LOCAL LABOUR**

The Contractor shall be responsible for conducting a complete investigation of the groups that need to be trained in order to compile an approved **training plan**.

The investigation shall cover at least the following aspects:

- a) Assess likelihood of conformance to task-specific requirements (*status quo*) of capabilities in terms of a formal skills audit.
- b) Identify minimum pre-qualification criteria in terms of existing knowledge and skill levels in relation to reaching target requirements.
- c) Evaluate personnel in terms of pre-qualification criteria and tasks to be performed (skills profile).
- d) Identify training needs.
- e) Identify the appropriate accredited training courses in terms of task-specific activities and identified training needs.

The Contractor shall identify an accredited training service provider to assist in the above skills audit and to help finalise the compilation of a training plan setting out the proposed courses. Once the training plan and proposed courses have been approved by the Engineer, the Contractor shall liaise with the accredited service provider to establish a date and appropriate training venue that would be conducive to learning and to perform training. On-site training is preferred.

The Contractor will be responsible for recording all training sessions and shall keep an attendance register.

#### **Item**

#### **Unit**

#### **C3.3.3.5 Conducting of skills audit and the development of a training plan** Provisional Sum

A provisional sum is allowed for the conducting of a skills audit of the Local Labour, as well as the compilation of a training plan.

The provisional sum shall include full compensation for identification of pre-qualification criteria and training needs, staff assessment and evaluation prior to training, all technical research, identification of accredited training courses, and all other actions necessary for commencement of official training sessions in accordance with the specification.

Any expenditure under this item requires the written prior approval of the Engineer and Employer.

	Item	Unit
<b>C3.3.3.6</b>	<b>Presenting accredited training course for Local Labour and EMEs</b>	<b>Provisional Sum</b>

The provisional sum shall include full compensation for presenting the courses, including lectures, demonstrations, on-site training and hands-on development, and improvement of maintenance personnel's skills to enable them to maintain and repair installations safely and efficiently at the satisfactory functional condition specified.

The provisional sum shall also include full compensation for the Contractor's time, appointment of the accredited trainer for the course, and for all material expenses such as paper hand-outs and slides for the whole group of trainees, the number of which shall be determined during development of the training course.

Any expenditure under this item requires the written prior approval of the Engineer and Employer.

### **C3.3.3.7 Penalty Calculation**

#### **Use of Local Labour**

Should the contractor fail to meet the minimum requirement of creating 10 employment opportunities on site for the duration of the contract, a penalty of 1,5 \* the value of the amount of employment that was not created, calculated at R180-00 per day per person, will be calculated and imposed. This amount will be deducted from the Contractor's payment certificate.

The Contractor is to indicate to the MBDA via a report certified by their auditors indicating the payments made to Local Labour at the end of the Contract before the retention money is released.

### **C3.3.4 PREFERRED SUBCONTRACTORS**

Subcontractors shall be EME's. An EME's is defined as an enterprise with annual total revenue of R 5 million or less. The company or economic activity that is owned by black persons and where there is substantial management control by Black People. Ownership refers to economic interest, whilst management refers to the membership of any board or similar governing body of the enterprise. The Broad-Based Black Economic Empowerment Act No. 53 of 2003, principles shall apply to BE's.

Enterprises shall comply with the following:

- Business shall be registered within the NMBM boundaries,
- Must be registered with the CIDB to a relevant class i.e CE, GB, ME etc.,
- Must have a current valid Tax Clearance Certificate.

### **C3.3.5 ATTENDANCE ON SUBCONTRACTORS**

An allowance is made in the bill of quantities for managing the Subcontractor during the course of the contract. The following items may be required:

- Allowance for procuring (tender) for the subcontract/s
- Allowance for mark up on the actual cost of the subcontract works
- Allowance for managing the subcontract

- Allowance for mentoring, supervising and site training
- Allowance to pay contractors within 30 days after submission of invoice

#### **C3.3.5.1 PROCEDURE FOR ENGAGING EME'S ON THE PROJECT**

The conditions of subcontract shall stipulate that the tenderer must be registered with the Construction Industry Development Board, in the relevant category, according to the estimated value of the Work Package.

The Contractor, with assistance from the Employers Agent / Social facilitator, must undertake the following tasks in appointing EME's:

- Issue subject to the approval of the Employer a Certification of Completion to each EME subcontractor.

The Contractor shall ensure that EME's are appointed timeously, so as not to delay the programme on the Main Contract in any way.

The above tasks are more fully described below.

#### **C3.3.5.2 ASSISTANCE TO THE TENDERERS**

(a) The Contractor shall be responsible for ensuring that prospective EME tenderers fully comprehend the following:

- Implications of the liabilities and responsibilities inherent in the subcontract into which the tenderer proposes entering;
- implications of the tendered rates;
- scope and extent of the works included in the subcontract;
- proper procedures for the submission of the tender;
- Procedures and basis on which tenders will be adjudicated and the subcontract awarded.

#### **C3.3.6 ATTENDANCE OF EME SUBCONTRACTORS**

The Contractor shall closely manage and supervise all EME's and shall manage, guide and assist each EME in all aspects of management, execution and completion of his subcontract. This shall typically include assistance with planning his works, sourcing and ordering of materials, labour relations, monthly measurements and invoicing procedures etc. The extent and level of such management, guidance and assistance, to be provided by the Contractor shall be commensurate with the expertise of relevant EME and shall be directed at enabling the EME's to achieve the successful execution and completion of the subcontract.

A payment item shall be provided in the schedule of quantities in the Main Contract, in which the Contractor will be reimbursed on the basis of a percentage of the value of the subcontracts awarded, for his attendance on the SMME subcontractors. This amount shall allow for:

- All costs incurred for advertising and adjudicating tenders, and for assistance afforded to prospective tenderers.
- All administrative, management and supervisory functions associated with the employment of the EME's.

The Contractor shall be required to appoint an EME Construction Manager who will be responsible to assist EME's as and when required. The EME Construction Manager's duties are specified in Clause PSA 5.11 below

### **C3.3.7 CONTRACTOR'S OBLIGATIONS TO SUBCONTRACTED EME'S**

#### **1. Dispute Avoidance and Resolution Procedures**

The Contractor shall at all times:

- (a) Apply the terms and conditions of the subcontract fairly and justly, taking due cognizance of the level of sophistication and experience of the particular EME concerned.
- (b) Closely manage and supervise all EME's and wherever feasible, give reasonable warning to EME's when any contravention of the terms of the subcontract has occurred or appears likely to occur. The Contractor shall whenever feasible, give the EME's reasonable opportunity to make good any such contravention or to avoid such contravention and shall render all reasonable assistance to the EME in this regard.

When taking any disciplinary actions or imposing any penalties as are provided for in the subcontract, the Contractor shall explain fully to the EME's that such actions are provided for in the subcontract.

If any dispute should arise between the Contractor and an EME such dispute shall be resolved in accordance with the provisions of the subcontract.

#### **2. QUALITY OF WORK AND PERFORMANCE OF THE EME SUBCONTRACTOR**

##### **2.1 QUALITY**

The contractor shall be fully liable for the quality of work done by the EME as of that work is done by the main contractor. All works are to be done according to the specs and as specified in the tender document.

##### **2.2 PERFORMANCE**

If the EME Subcontractor, in the opinion of the Employers Agent, fails to comply with the criteria as listed below, the Employers Agent shall issue a written warning to the Contractor, stating all the areas of non-compliance. A copy of the letter of warning shall be forwarded to the Employer. The criteria may include, but are not limited to, the following:

- (a) Acceptable standard of works as set out in the specifications in the subcontract.
- (b) Progress in accordance with the time constraints in the subcontract.
- (c) Punctual and full payment of the workforce and suppliers.
- (d) Site safety
- (e) Accommodation of traffic.

The EME Subcontractor shall have 21 days from the date of receipt of the letter of warning by the Contractor to address and rectify the issues raised by the Employers Agent, with the exception of points (d) and (e), for which the reaction time shall be 24 hours. Failure to do so will be sufficient grounds for the Contractor to terminate the subcontract, provided that the EME Committee is satisfied that the Contractor has made every effort to correct the performance by the EME Subcontractor.

### **C3.3.8 ISSUING OF COMPLETION CERTIFICATE**

The Contractor shall, within 7 days of the completion of each subcontract completed in accordance with the provisions of this specification, issue free of charge to the EME, a Certificate of Completion.

The format, layout and appearance of certificates issued shall be agreed by the EME Committee, provided always that they shall be respectable and presentable in accordance with the general standards of normal business practice. All certificates issued shall be co-signed by the Employers Agent and a senior representative of the Contractor, who has been duly authorized thereto.

The Certificate of Completion shall provide the following information:

**(A) MAIN CONTRACT DATA:**

- (i) Contract title;
- (ii) Contractor's full name and address;
- (iii) Employers Agent name and address;
- (iv) Employer's name.

**(B) SUBCONTRACT DATA:**

- (i) EME name and address;
- (ii) Scope or extent of the subcontract works;
- (iii) Value of the subcontract works;
- (iv) Duration of the subcontract;
- (v) Date of completion of the subcontract;
- (vi) Description of the training undergone by the EME.

### **C3.3.9 CONTRACTOR'S LIABILITY**

No provision or requirement set out in this specification shall be deemed to relieve the Contractor of any liability or obligation under the contract, and in accordance with the provisions of Clause 4.4 of the General Conditions of Contract for Construction Works (2015), the Contractor shall be fully liable for the acts, defaults and neglects of any EMEs, his agents or employees, as fully as if they were the acts, defaults and neglects of the Contractor, his agents or employees.

### **C3.3.10 MEASUREMENT AND PAYMENT**

Under the work packages set aside for EMEs, the EME shall be responsible for all labour, plant, equipment, tools, materials and any other incidentals that may be required to carry out the works in accordance with the specifications.

In cases where the EME is unable to have the above then the main contractor is to provide plant, equipment, tools, material and other items needed by the EME in order to implement his work and such contracts will be regarded as labour only sub-contractors.

The Main Contractor shall supervise and manage the EME work at all times in order to ensure compliance with the specifications and drawings.

The Main contractor shall pay EME's 7 days after issue of an Invoice. The main contractor will not charge EME's handling costs i.e. bank charges, early payment discounts etc.

#### **C3.3.10.1 Payment of EME's**

EME's are to be invited to submit their payment certificates or claims fortnightly, and are to be paid by the contractor within 7 days.

Payment of EME's may not be delayed pending payment of the contractor by the Employer.

### **C3.3.11 GENERAL**

Claims for extension of time due to delays caused by EME's will not be entertained; the main contractor is to programme in his work factoring the use of EME's. Nonperformance of EME's shall be dealt with in terms of the clause 10 in the SAFCEC sub contractor agreement.

#### **RETENTION**

A five percent (5%) Excluding VAT of the sub contract value will be deducted as retention on EME with half to be released on issue of the completion certificate for the EME.

#### **SUB CONTRACTING BY EME'S**

The Main contractor shall not permit the invited EME sub contractor to further sub contract on any other conditions than those applying in the project specification to subcontractors or EME subcontractor



## **JOINT VENTURING & CONSORTIUM**

The EME committee shall decide whether to permit the invited EME sub contractor to enter into Joint Ventures or form a consortium with an external EME.

## **PENALTIES FOR NON COMPLIANCE WITH SUB CONTRACTING**

Should the main contractor do the work that is earmarked for sub-contracting to EME's. The main contractor will be charged a penalty of 100% of value of any work he/she has done. The amount will be deducted from the monthly payment certificate.

## C3.4: CONSTRUCTION

### C3.4.1 WORKS SPECIFICATIONS

#### C3.4.1.1 Applicable SANS standards

The applicable SABS 1200 Standardized Specifications for Civil Engineering Construction read in conjunction with the SABS 0120 Code of Practice for use with Standardized specifications for Civil Engineering Construction and Contract Documents will apply until such time as the SANS standards for civil engineering are finalised.

#### C3.4.1.2 Applicable national and international standards

For the purpose of this Contract the latest issues of the following Standardized Specifications for Civil Engineering Construction, applicable at the date of the tender advertisement, shall apply:

SABS 1200 A	:	GENERAL
SABS 1200 AB	:	ENGINEER'S OFFICE
SABS 1200 C	:	SITE CLEARANCE
SABS 1200 D	:	EARTHWORKS
SABS 1200 DB	:	EARTHWORKS (PIPE TRENCHES)
SABS 1200 DM	:	EARTHWORKS (ROADS, SUBGRADE)
SABS 1200 GA	:	CONCRETE (SMALL WORKS)
SABS 1200 L	:	MEDIUM PRESSURE PIPELINES
SABS 1200 LB	:	BEDDING (PIPES)
SABS 1200 LC	:	CABLE DUCTS
SABS 1200 LE	:	STORMWATER DRAINAGE
SABS 1200 M	:	ROADS (GENERAL)
SABS 1200 ME	:	SUBBASE
SABS 1200 MF	:	BASE
SABS 1200 MG	:	BITUMINOUS SURFACE TREATMENT
SABS 1200 MH	:	ASPHALT BASE AND SURFACING
SABS 1200 MJ	:	SEGMENTED PAVING
SABS 1200 MK	:	KERBING AND CHANNELLING
SABS 1200 MM	:	ANCILLARY ROADWORKS

**The variations and additions to the specifications are listed in C3.4.11.**

The “Standard Infrastructure Details”, as published by the NMBM’s Infrastructure & Engineering Directorate, Revised Edition dated July 2007 shall also apply. The Contractor shall obtain his own copy.

In addition, the following Particular Specifications for work not covered by the SABS 1200 Standardized Specifications are also bound in the Scope of Work.

**PA Project Relevant Health and Safety Specifications**

**PC Environmental Management Plan**

**PF Wall and Fence**

**PG Mesh Reinforced Concrete**

**C3.4.1.3 Certification by recognised bodies**

As specified elsewhere.

**C3.4.1.4 Agrément certificates**

As specified elsewhere.

**C3.4.2 PLANT AND MATERIALS**

**C3.4.2.1 Plant and materials supplied by the employer**

The Employer shall not supply any plant or materials.

**C3.4.2.2 Materials, samples and shop drawings**

Materials or work, which does not conform to the approved samples submitted in terms of Clause 7 of the Conditions of Contract, will be rejected. The Engineer reserves the right to submit samples to tests to ensure that the material represented by the sample meets the specification requirements.

The costs of any such test conducted by or on behalf of the Engineer, the results of which indicate that the samples provided by the Contractor do not conform to the requirements of the Contract, shall, in accordance with the provisions of Clause 7 of the Conditions of Contract, be for the Contractor’s account.

**C3.4.3 CONSTRUCTION EQUIPMENT**

**C3.4.3.1 Requirements for equipment**

All equipment must comply with the requirements as stipulated in the Environmental Regulations and specifications and contained in the OHS Act.

**C3.4.3.2 Equipment provided by the employer**

The Employer shall not supply any equipment.

#### **C3.4.4 EXISTING SERVICES**

The requirements of PSA 5.4 shall apply.

The Contractor shall familiarize himself with all existing services and liaise with all relevant authorities for the location and detection of existing services. The Contractor shall also use all necessary means to locate and expose services without damage to such services.

#### **C3.4.5 SITE ESTABLISHMENT**

##### **C3.4.5.1 Water Supply**

The Contractor shall make his own arrangements regarding the supply of water.

The Contractor shall, at his own expense, be responsible for obtaining and distributing all water as may be required for the purposes of executing the Contract, including water for both construction purposes and domestic use as well as for making all arrangements in connection therewith.

The Contractor shall further, at his own expense, be responsible for providing all necessities for procuring, storing, transporting and applying water required for the execution of the Contract, including but not limited to all piping, valves, tanks, pumps, meters and other plant and equipment, as well as for all work and superintendence associated therewith.

The Contractor shall make himself thoroughly acquainted with the regulations relating to the use of water and shall take adequate measures to prevent the wastage of water.

The sources of all water utilised for the purposes of the Contract shall be subject to the prior approval of the Engineer, which approval shall not be unreasonably withheld. The Contractor shall comply with all prevailing legislation in respect of drawing water from natural and other sources and shall, when required by the Engineer, produce proof of such compliance.

The distribution of water shall be carried out by the Contractor strictly in accordance with the applicable laws and regulations. All water provided by the Contractor for construction purposes shall be clean, free from undesirable concentrations of deleterious salts and other materials and shall comply with any further relevant specifications of the Contract.

The Contractor shall, whenever reasonably required by the Engineer, produce test results demonstrating such compliance. Water provided by the Contractor for human consumption shall be healthy and potable to the satisfaction of the health authorities in the area of the Site.

The Contractor may make application to the Municipality's Water Division for a clean water supply point but shall bear all the costs for the installation of such supply point. Water used by the Contractor from the Employer's mains will be charged for at the tariffs ruling at the time of use. The Contractor shall make himself thoroughly acquainted with the regulations relating to the use of water and shall take adequate measures to prevent the wastage of water.

The Employer accepts no responsibility for the shortage of water due to any cause whatsoever or for the additional costs incurred by the Contractor as a result of such shortage.

The Contractor shall take note that no separate or direct payment of any kind whatsoever will be made for any cost incurred to obtain, distribute, consume and use water or for the provision of a water supply point or for the cost of water drawn. Payment for the aforementioned shall be deemed to be covered by the rates and prices tendered and paid for the various items of work included under the Contract.

Accounts issued by the Nelson Mandela Bay Municipality for water drawn shall also be settled directly by the Contractor.

#### **C3.4.5.2 Power / Electricity Supply**

The Contractor shall make his own arrangements with the Electricity Department for a supply of electricity if required and shall pay establishment and consumption costs at the tariffs ruling at the time.

The Contractor shall, at his own expense, be responsible for obtaining and distributing all electricity as he may require for the purposes of executing the Contract, including electricity for both construction purposes and domestic use as well as for making all arrangements in connection therewith.

The distribution of electricity shall be carried out by the Contractor strictly in accordance with the applicable laws and regulations. No separate payment will be made to the Contractor for the obtainment, distribution and consumption of electricity, the costs of which will be deemed to be in the Contractor's tendered rates and prices.

#### **C3.4.5.3 Location of Site Camp and Materials Storage Area**

The Site of the Works is restricted and the Employer has no suitable areas available where the Contractor may erect offices, workshops, stores and other facilities that he requires for the purposes of the Contract. The Contractor shall, at his own cost, be responsible for locating and making all arrangements necessary for securing an area suitable to meet his needs in respect of the erection of the Contractor's offices, stores and other facilities, including the facilities to be provided for the Engineer in accordance with the Contract.

Any potential area proposed by the Contractor shall be within reasonable proximity to the Site of the Works and its location shall be subject to the approval of the Engineer, which approval shall not be unreasonably withheld.

The Contractor shall be responsible for arranging, at his own cost, for the provision of all services he may require in the area, as well as elsewhere on the Site.

On completion of the construction works the surface of the areas utilised shall be properly re-instated.

#### **C3.4.5.4 Temporary Office for the Engineer and Contract Meetings**

The Contractor shall provide on the Site one office for the exclusive use of the Engineer.

Such office shall comply with and be furnished in accordance with the requirements of subclause 3.2 of SABS 1200 AB. The Contractor shall maintain the office in accordance with the requirements of subclause 5.2 of SABS 1200 AB.

Such office accommodation shall be provided within the Contractor's site establishment facilities.

The Engineer and his Representative shall be allowed free use of all the Contractor's site facilities.

The Contractor shall further provide within his own site establishment facilities, a suitably furnished office or other venue capable of comfortably accommodating a minimum of six (6) persons at Contract meetings.

The Engineer shall be allowed free use of such venue for conducting any other meetings concerning the Contract at all reasonable times

#### **C3.4.5.5 Sanitary facilities**

The Contractor shall, at his own expense, be responsible for safely and hygienically dealing with and disposing of all human excrement and similar matter generated on the Site during the course of the Contract, all to the satisfaction of the responsible health authorities in the area of the Site as well as the Engineer.

All such excrement shall be removed from the Site and shall not be disposed of by the Contractor on the Site. The Contractor shall further comply with any other requirements in this regard as may be stated in the Contract.

The Contractor shall further, as a minimum, supply and maintain chemical toilets for use by his workmen. The number of toilets shall be based on one toilet per fifteen personnel on site.

Under no circumstances will the Contractor's staff be allowed to use any other toilet facilities in and around the Site.

#### **C3.4.5.6 Contract nameboards and identity boards**

The Contractor shall provide, erect and maintain two contract nameboard at such position and location as are directed by the Engineer, all in accordance with the requirements set out in SABS 1200 AB. The Contractor shall before ordering or manufacturing any such contract nameboard, obtain the Engineer's written approval in respect of all names and wording to appear on the contract nameboard.

The Contractor shall further provide, erect and maintain at least one identity boards at such position and location as are directed by the Engineer.

The identity boards shall be as detailed on Drawing PSA 3 of the Standard Infrastructure Details as published by the Infrastructure & Engineering Directorate, NMBM revised edition dated July 2007.

**C3.4.5.7 Accommodation of Employees**

The Contractor shall make his own arrangements for the accommodation of his employees.

**C3.4.5.8 Security of Contractor's site camp**

Security of the Contractor's site camp will be the Contractor's own responsibility and no additional payment will be made should additional security measures need to be taken during the Contract.

**C3.4.5.9 Laboratory facilities**

Except for testing the onsite density of fill and controlled layers for which the Contractor shall make available to the Engineer nuclear density equipment (Troxler or similar approved, refer PSA 8.4.7), no laboratory facilities will be required by the Engineer. Any acceptance control testing required by the Engineer will be carried out by a laboratory designated by the Engineer.

A Prime Cost Sum has been provided in the Bill of Quantities to cover the cost of acceptance control testing ordered by the Engineer. The Contractor shall however take note that if the work or material tested does not comply with the relevant specification the invoiced cost of tests carried out shall be borne by him.

**C3.4.6 SITE USAGE**

Access to site shall be limited to the Contractor and his personnel. The Contractor shall be responsible to control unauthorized entry to the site and shall inform the Engineer of any breach of such rules. The site shall be managed and used for its intended purpose.

**C3.4.7 PERMITS AND WAYLEAVES**

Positions of the existing services in the form of a wayleave needs to be obtained by the contractor before works commences with proof of enquiry from the relevant Municipal Infrastructural departments.

**C3.4.8 SURVEY CONTROL AND SETTING OUT OF THE WORKS**

Before commencement of work, the Contractor is to liaise with the Engineer to establish exactly the status of all survey control and boundary pegs on the Site.

The position and level of all pegs found and indicated shall be recorded and protected.

On completion of the Contract, all pegs that have been unavoidably disturbed shall be replaced by the Employer. Pegs which have, in the opinion of the Engineer, been disturbed due to the negligence of the Contractor will be replaced at the Contractor's expense.

**C3.4.9 FEATURES REQUIRING SPECIAL ATTENTION**

**C3.4.9.1 Site maintenance**

During progress of the work and upon completion thereof, the Site of the Works shall be kept and left in a clean and orderly condition. The Contractor shall store materials and equipment for which he is responsible in an orderly manner and shall keep the Site free from debris and obstructions.

**C3.4.9.2 Testing and quality control**

**a) Contractor to engage services of an independent laboratory**

Notwithstanding the requirements of the Specifications pertaining to testing and quality control, the Contractor shall engage the services of an independent laboratory certified and approved by the South African National Accreditation Systems

(SANAS) to undertake all testing of materials, the results of which are specified in, or may reasonably be inferred from, the Contract.

These results will be taken into consideration by the Engineer in deciding whether the quality of materials utilised and workmanship achieved by the Contractor comply with the requirements of the Specifications.

The above shall apply irrespective of whether the specifications indicate that the said testing is to be carried out by the Engineer or by the Contractor.

The Contractor shall be responsible for arranging with the independent testing laboratory for the timeous carrying out of all such testing specified in the Contract, at not less than the frequencies and in the manner specified. The Contractor shall promptly provide the

Engineer with copies of the results of all such testing carried out by the independent laboratory.

For the purposes of this clause, an "independent laboratory" shall mean an "approved laboratory" (as defined in subclause PSA 7.2) which is not under the management or control of the Contractor and in which the Contractor has no financial interest, nor which has any control or financial interest in the Contractor.

#### **b) Additional testing required by the Engineer**

In addition to the provisions of subclause C3.4.9.2 (a): Contractor to engage services of an independent laboratory, the Engineer shall be entitled at times during the Contract to require that the Contractor arrange with the independent laboratory to carry out any such tests, additional to those described in subclause C3.4.9.2 (a), at such times and at such locations in the Works as the Engineer shall prescribe. The Contractor shall promptly and without delay arrange with the independent laboratory for carrying out all such additional testing as required by the Engineer, and copies of the test results shall be promptly submitted to the Engineer.

#### **c) Costs of testing**

##### **(i) Tests in terms of subclause C3.4.9.2(a)**

The costs of all testing carried out by the independent laboratory in accordance with the requirements of subclause C3.4.9.2 (a) above shall be borne by the Contractor and shall be deemed to be included in the tendered rates and prices for the respective items of work as listed in the Bill of Quantities and which require testing in terms of the Specifications.

No separate payments will be made by the Employer to the Contractor in respect of any testing carried out in terms of subclause C3.4.9.2 (a).

Where, as a result of the consistency of the materials varying or as a result of failure to meet the required specifications for the work it becomes necessary to carry out additional tests (e.g. re-tests on rectified work and/or replacement materials), the costs of such additional testing shall be for the Contractor's account.



## **(ii) Additional tests required by the Engineer**

The costs of any additional tests required by the Engineer in terms of subclause C3.4.9.2.(b): Additional testing required by the Engineer, shall be reimbursed to the Contractor against substitution of the Provisional Sum allowed therefore in the Bill of Quantities; provided always that the costs of any such additional tests ordered by the Engineer, the results of which indicate that the quality of the materials utilised and/or the standard of workmanship achieved are/is not in accordance with the specifications, shall not be reimbursable to the Contractor.

### **C3.4.9.3 Subcontractors**

All matters pertaining to subcontractors (including Selected Subcontractors appointed in terms of Clause 4.4 of the Conditions of Contract) and the work executed by them shall be dealt with directly between the Engineer and the Contractor in the context of all subcontract work being an integral part of the Works for which the Contractor is responsible as set out in C3.3.

The Engineer will not liaise directly with any subcontractors nor will he issue instructions concerning the subcontract works directly to any subcontractor.

All matters arising from the subcontract agreements shall be dealt with directly between the Contractor and the subcontractors and the Engineer will not be involved.

### **C3.4.9.4 Opening up and closing down of designated borrow pits**

Not applicable.

### **C3.4.9.5 Access to properties (where relevant)**

The Contractor shall organise the work to cause the least possible inconvenience to the public and to the property owners adjacent to or affected by the work, and except as hereunder provided, shall at all times provide and allow pedestrian and vehicular access to properties within or adjoining or affected by the area in which he is working. In this respect the Contractor's attention is drawn to Clause 8.1 of the Conditions of Contract.

Where applicable and if as a result of restricted road reserve widths and the nature of the work, the construction of bypasses is not feasible, construction shall be carried out under traffic conditions to provide access to erven and properties.

Notwithstanding the above, the Contractor may, with the prior approval of the Engineer (which approval shall not be unreasonably withheld), make arrangements with and obtain the acceptance of the occupiers of erven and properties to close off part of a street, road, footpath or entrance temporarily, provided that the Contractor duly notifies the occupiers of the intended closure and its probable duration, and reopens the route as punctually as possible. Where possible, such streets, roads, footpaths and entrances shall be made safe and reopened to traffic overnight. Such closure shall not absolve the Contractor from his obligations under the Contract to provide access at all times. Barricades, traffic signs, drums and other safety measures appropriate to the circumstances shall be provided by the Contractor to suit the specific conditions.

#### **C3.4.9.6 Employment of local labour**

It is the intention that this Contract should make maximum use of the local labour force that is presently under-employed. To this end the Contractor shall limit the utilisation on the Contract of non-local employees to that of key personnel only and to employ and train local labour to the extent necessary for the execution and completion of this Contract as set out in C3.3.

The Contractor shall fill in the form entitled Key Personnel in the Forms to be completed by the Tenderer. The data stated on the above-mentioned form will be strictly monitored during the Contract period and any deviations therefrom shall be subject to the prior approval of the Engineer, which approval shall not be unreasonably withheld.

#### **C3.4.9.7 Monthly statements and payment certificates**

The statement to be submitted by the Contractor in terms of Clause 6 of the Conditions of Contract shall be prepared by the Contractor at his own cost, strictly in accordance with the standard payment certificate prescribed by the Engineer, in digital electronic computer format. The Contractor shall, together with a copy of the digital electronic computer file of the statement, submit two (2) A4 size paper copies of the statement.

For the purposes of the Engineer's payment certificate, the Contractor shall subsequently be responsible, at his own cost, for making such adjustments to his statement as may be required by the Engineer for the purposes of accurately reflecting the actual quantities and amounts which the Engineer deems to be due and payable to the Contractor in the payment certificate.

The Contractor shall, at his own cost, make the said adjustments to the statement and return it to the Engineer within three (3) normal workings days from the date on which the Engineer communicated to the Contractor the adjustments required. The Contractor shall submit to the Engineer five (5) sets of A4 size paper copies of such adjusted statement, together with a copy of the electronic digital computer file thereof.

Any delay by the Contractor in making the said adjustments and submitting to the Engineer the requisite copies of the adjusted statement for the purposes of the Engineer's payment certificate will be added to the times allowed to the Engineer in terms of Clause 6.10 of the Conditions of Contract to submit the signed payment certificate to the Employer and the Contractor. Any such delay will also be added to the period in which the Employer is required to make payment to the Contractor.

#### **C3.4.9.8 Construction in restricted areas**

Working space on this Contract is extremely restricted. The construction method used in these restricted areas largely depends on the Contractor's Plant. Notwithstanding, measurement and payment will be strictly according to the specified cross-sections and dimensions irrespective of the method used, and the rates and prices tendered will be deemed to include full compensation for any difficulties encountered by the Contractor while working in restricted areas. No extra payment or any claim for payment due to these difficulties will be considered.

#### **C3.4.9.9 Notices, signs, barricades and advertisements**

All notices, signs and barricades, as well as advertisements, may be used only if approved by the Engineer. The Contractor shall be responsible for their supply, erection, maintenance and ultimate removal and shall make provision for this in his tendered rates.

The Engineer shall have the right to instruct the Contractor to move any sign, notice or advertisement to another position, or to remove it from the Site of the Works if in his opinion it is unsatisfactory, inconvenient or dangerous.

#### **C3.4.9.10 Workmanship and quality control**

The onus to produce work that conforms in quality and accuracy of detail to the requirements of the Specifications and Drawings rests with the Contractor, and the Contractor shall, at his own expense, institute a quality control system and provide suitably qualified and experienced engineers, foremen, surveyors, materials technicians, other technicians and technical staff, together with all transport, instruments and equipment to ensure adequate supervision and positive control of the Works at all times. The cost of supervision and process control, including testing carried out by the Contractor, will be deemed to be included in the rates tendered for the related items of work.

The Contractor's attention is drawn to the provisions of the various Standardized Specifications regarding the minimum frequency of testing required. The Contractor shall, at his own discretion, increase this frequency where necessary to ensure adequate control.

On completion and submission of every part of the work to the Engineer for examination and measurement, the Contractor shall furnish the Engineer with the results of the relevant tests, measurements and levels to demonstrate the achievement of compliance with the Specifications.

#### **C3.4.9.11 Public Safety**

The Contractor shall at all times ensure that his operations do not endanger any member of the public.

As the area is adjacent to a commercial, residential (flats), public facilities and other public spaces, the **Contractor shall take special precautions to prevent public access to any danger areas on the Works, e.g. by temporary barricades and/or fencing of the entire works, which comply with the OHS Act of 1993 and Construction Regulations of 2014.**

##### **(i) Gangsterism and Related Activities**

The Contractor must provide adequate specialised security services to protect his / her staff, plant, materials, tools, equipment from exposure to gangs and related activities. The Contractor must also provide competent management on site to guide, direct and instruct the workers as to the precautionary measures to be taken during time of conflict between rival gangs. Emergency Preparedness Training must be conducted at regular intervals with all the workers of the Contractor and proof thereof kept in the health & safety file on site.

**(ii) Available data/information on gangs and related activities in Helenvale**

The Contractor shall establish contact with the chairperson of the Community Policing Forum (CPF) and Helenvale Sector Manager of the South African Police Service (SAPS).

Contact details:

- CPF Chairperson, Mr Wayne Jagers – 079 799 2102.
- Helenvale Sector Manager, Capt. Baadjies – 074 588 4822

The record shows that there are **five** main Gangs in Helenvale residing within four territories listed below in no particular order.

- (a) Territory 1: between Old Stanford Road and Hartebees Street known as “Die Gaat”
- (b) Territory 2: between Fitchardt, Road and Pienaar Street,
- (c) Territory 3: between Deverell/Kobus and Lanique Roads, and
- (d) Territory 4: between Renecke Road and Anita Drive.

However notwithstanding the above, the onus and responsibility rests with Tenderer to evaluate and verify the above.

**C3.4.9.12 Construction Regulations (2014)**

The Contractor shall be required to comply with the Occupational Health and Safety Act, 1993: Construction Regulations, 2014 (the Regulations) as promulgated in Government Gazette No 25207 and Regulation Gazette No 7721 of 18 July 2003. Non-compliance with these regulations, in any way whatsoever, will be adequate reason for suspending the Works.

The proposed type of work, materials to be used and potential hazards likely to be encountered on this Contract are detailed in the Project Specifications, Schedule of Quantity and Drawings as well as in the Employer’s health and safety specification (Regulation 4(1)) of the Construction Regulations 2014, which is bound under Particular Specification PA of this Document.

The Contractor shall, in terms of Regulation 5(1), provide a comprehensive health and safety plan detailing his proposed compliance with the regulations, for approval by the Employer or his Agent.

The Contractor shall at times be responsible for full compliance with the approved plan as well as the Construction Regulations and no extension of time will be considered for delays due to non-compliance with the above-mentioned plan or regulations.

A payment item is included in the Schedule of Quantities to cover the Contractor’s cost for compliance with the OHS Act and the above-mentioned regulations.

The Contractor shall obtain his own copy of the Construction Regulations.

The Employer and the Contractor hereby agree, in terms of the provisions of Section 37(2) of the Occupational Health and Safety Act, 1993 (Act 85 of 1993), hereinafter referred to as “the Act”, that the following arrangements and procedures shall apply between them to ensure compliance by the Contractor with the provisions of the Act:

- a) The Contractor undertakes to acquaint the appropriate officials and employees of the Contractor with all relevant provisions of the Act and the Regulations promulgated in terms of the Act.
- b) The Contractor undertakes that all relevant duties, obligations and prohibitions imposed in terms of the Act and Regulations on the Contractor will be fully complied with.

- c) The Contractor accepts sole liability for such due compliance with the relevant duties, obligations and prohibitions imposed by the Act and Regulations and expressly absolves the Employer from himself being obliged to comply with any of the aforesaid duties, obligations and prohibitions, with the exception of such duties, obligations and prohibitions expressly assigned to the Employer in terms of the Act and its associated Regulations.
- d) The Contractor agrees that any duly authorised officials of the Employer shall be entitled, although not obliged, to take such steps as may be necessary to ensure that the Contractor has conformed to his undertakings as described in paragraphs a) and b) above, which steps as may include, but will not be limited to, the right to inspect any appropriate site or premises occupied by the Contractor, or any appropriate records or safety plans held by the Contractor.
- e) The Contractor shall be obliged to report forthwith to the Employer and Engineer any investigation, complaint or criminal charge which may arise as a consequence of the provisions of the Act and Regulations, pursuant to work performed in terms of this Contract, and shall, on written demand, provide full details in writing, to the Employer and Engineer, of such investigation, complaint or criminal charge.

The Contractor shall furthermore, in compliance with Constructional Regulations 2014 to the Act:

- a) Acquaint himself with the requirements of the Employer's health and safety specification as laid down in Regulation 5 (1) (a & b) of the Construction Regulation 2014, and prepare a suitably and sufficiently documented health and safety plan as contemplated in the Regulation for approval by the Employer. The Contractor's health and safety plan and risk assessment shall be submitted to the Employer within the time as stated in the Conditions of Contract and shall be implemented and maintained from the Commencement of the Works.
- b) The Employer, or his assigned agent, reserves the right to conduct periodic audits, as contemplated in the Construction Regulations 2014, to ensure that the Contractor is compliant in respect of his obligations. Failure by the Contractor to comply with the requirements of these Regulations shall entitle the Engineer, at the request of the Employer or his agent, to suspend all or any part of the Works, with no recourse whatsoever by the Contractor for any damages incurred as a result of such suspension, until such time that the Employer or his agents are satisfied that the issues in which the Contractor has been in default have been rectified.

#### **C3.4.9.13 Sand and Dust Control**

It must be noted the all the works will take place in the Helenvale Area, Port Elizabeth. The Contractor shall, for the duration of the contract, take appropriate measures to control the dust and soil movement which may arise due to his operations. All cost associated with dust control will not be measured separately, but deemed to be included within all the appropriate work items.

#### **C3.4.9.14 Spoil Sites**

The Contractor shall obtain his own spoil sites, with the proviso that they are legally registered solid waste sites.

#### **C3.4.10 EXTENSION OF TIME DUE TO ABNORMAL RAINFALL**

A claim for extension of time in respect of delays suffered by the Contractor in consequence of abnormal wet climatic conditions will be considered by the Engineer in terms of Clause 5.12 of the Conditions of Contract and in accordance with provisions set out hereunder.

For the purposes of extension of time, a delay caused by abnormal wet climatic conditions will be regarded as a delay only if, in the opinion of the Engineer, all progress on an item or items of work on the critical path of the Contractor's working programme as approved in terms of Clause 5.6 of the Conditions of Contract has been brought to a halt.

Unless it is customary to carry out the work, in respect of which a delay was suffered, by rotary shifts or by day and by night, only delays to critical path items experienced as a result of wet climatic conditions during normal working hours (as defined in Clause 5.8 of the Conditions of Contract) will be taken into account for extension of time. This will apply notwithstanding the fact that a delay may have occurred on a portion of the Works on the critical path due to wet climatic conditions, which work was being executed outside the said normal hours with the permission of the Engineer, granted in terms of Clause 5.8 of the Conditions of Contract.

The Contractor shall make due allowance within his programme submitted in terms of Clause 5.6 of the Conditions of Contract, for the total delay to work items on the critical path resulting from normal wet climatic conditions. The specified allowances for this Contract are defined in Clause 5.12.2.2 of the Conditions of Contract.

Extension of time, if granted by the Engineer, will be determined as the aggregate number of normal working hours for which all progress on the item or items on the critical path was brought to a halt as a result of wet climatic conditions, less the number of normal working days specified in Clause 5.12.2.2 of the Conditions of Contract.

In determining the revised Due Completion Date of the Contract, the Engineer shall add the equivalent number of normal working days delay determined in accordance with this Clause and all intervening normal non-working days to the prevailing Due Completion Date.

#### **C3.4.11 VARIATIONS AND ADDITIONS TO SABS 1200 STANDARDIZED SPECIFICATIONS AND PARTICULAR SPECIFICATIONS**

The following variations and additions to the SABS 1200 Standardized Specifications referred to shall apply to this Contract.

The prefix "PS" indicates an amendment to SABS 1200. The prefix "PSA" indicates an amendment to SABS 1200 A, "PSDB" to SABS 1200 DB and so on.

The letters and numbers following these prefixes respectively indicate the relevant Standardized Specification and clause numbers in SABS 1200 to which the variation or addition thereto applies.

An asterisk (\*) placed next to a PS Subclause number denotes the inclusion of an additional Subclause for which no equivalent appears in SABS 1200.

The terms "project specification" or "Portion 2 of the project specification" appearing in any of the SABS 1200 Standardized specifications shall be replaced with the term "Scope of Work".

The term "Scope of Work" shall mean Part 3 of The Contract.

Further to the above it should be noted that where in a specific Standardized Specification reference is made to a Subclause in another Standardized Specification, any amendment or addition to the Subclause referred to, as provided for in the

Specification, shall apply. The aforementioned shall also apply with respect to Clauses referred to in a Particular Specification.

**The variations and additions to the SANS 1200 Standardized Specifications follows herewith:**

## **PSA GENERAL**

### **PSA 1 SCOPE**

Replace the contents of Clause 1.1, including the notes, with the following:

“1.1 This specification covers requirements, principles and responsibilities of a general nature which are generally applicable to civil engineering construction and building works contracts, as well as the requirements for the Contractor’s establishment on the Site.”

## **PSA 2 INTERPRETATIONS**

### **PSA 2.3 DEFINITIONS**

In the opening phrase, insert the words: “the definitions given in the Conditions of Contract and” between the words “specification” and “the following”.

#### **a) General**

Add the following definitions:

“General Conditions / Conditions of Contract. The General Conditions of Contract specified for use with this Contract as amended in the Contract Data.

SpecifiedAs specified in the Standardized Specifications, the Drawings or the Scope of Work. “Specifications” shall have the corresponding meaning.”

#### **c) Measurement and payment**

Replace the definitions for “Fixed charge”, “Time-related charge” and “Value-related charge” with the following:

“Fixed charge. A charge that is not subject to adjustment on account of variations in the value of the Contract Price or the time allowed in the Contract for the completion of the work.

Time-related charge. A charge, the amount of which varies in accordance with the Time for Completion of the Works, adjusted in accordance with the provisions of the Contract.

Value-related charge. A charge, the amount of which varies pro rata with the final value of the measured work executed and valued in accordance with the provisions of the Contract.”

## **PSA 2.4 ABBREVIATIONS**

### a) Abbreviations relating to standard documents

Add the following abbreviation:

“CKS: SABS Co-ordinating Specification.”

## **PSA 3 MATERIALS**

### **PSA 3.1 QUALITY**

Where applicable, materials shall bear an official standardization mark.

Add the following:

"Where proprietary materials are specified, it is to indicate the quality or type of materials or articles required, and where the terms “or other approved” or “or approved equivalent” are used in connection with proprietary materials or articles, it is to be understood that the approval shall be at the sole discretion of the Engineer."

### **“PSA 3.3\* ORDERING OF MATERIALS**

The quantities set out in the Bill of Quantities have been carefully determined from calculations based on data available at the time of its compilation, but are to be considered as approximate quantities only. Before ordering materials of any kind the Contractor shall be solely responsible for determining, from the Drawings issued or approved by the Engineer for construction purposes, the actual quantities of materials required for the execution of the Works. No liability or responsibility whatsoever shall be attached to the Employer or the Engineer in respect of materials ordered by the Contractor except when ordered in accordance with the Drawings issued or approved by the Engineer for construction purposes.”

## **PSA 4 PLANT**

### **PSA 4.1 SILENCING OF PLANT**

Replace the contents of Clause 4.1 with the following:

“The Contractor’s attention is drawn to the applicable regulations pertaining to noise and hearing conservation, framed under the Occupational Health and Safety Act (Act No. 85 of 1993) as amended.

The Contractor shall at all times and at its own cost, be responsible for implementing all necessary steps to ensure full compliance with such regulations, including but not restricted to the provision and use of suitable and effective silencing devices for pneumatic tools and other Plant which would otherwise cause a noise level in excess of that specified in the said regulations.

Where appropriate, the Contractor shall further, by means of temporary barriers, effectively isolate the source of such noise in order to comply with the said regulations.”



## **PSA 4.2 CONTRACTOR'S OFFICES, STORES AND SERVICES**

Add the following at the end of the first paragraph of Clause 4.2:

"The Contractor's buildings, sheds and other facilities erected or utilised on the Site for the purposes of the Contract shall be fenced off and shall contain all offices, stores, workshops, testing laboratories, toilet facilities, etc. as may be required by the Contractor. The facilities shall always be kept in a neat and orderly condition.

A suitable and dedicated material storage container as well as a furnished office shall be provided for the exclusive and sole use of the Micro Enterprise (SMME's) Subcontractors.

No personnel may reside on the Site. Only night-watchmen may be on the Site after hours

The Contractor shall provide on the Site and in close proximity to the actual locations where the work is being executed, one toilet per 15 workmen, which toilets shall be effectively screened from public view and their use enforced. Such toilets shall be relocated from time to time as the location of the work being executed changes, so as to ensure that easy access to the toilets is maintained.

The Contractor shall, where applicable, make all necessary arrangements and pay for the removal of night soil."

## **PSA 5 CONSTRUCTION**

### **PSA 5.1 SURVEY**

#### **PSA 5.1.1 Setting out of the Works**

The installed benchmarks and erf boundary pegs shall be used by the Contractor for setting out the works.

Add the following paragraph:

"The Contractor shall be required to check and verify, prior to commencement of any construction work, all benchmarks and boundary reference pegs, as shown and detailed on the Drawings. Reference and benchmark pegs disturbed and/or removed during the construction period shall be replaced by a Professional Land Surveyor and the Contractor shall bear the cost of such replacement. Payment to check and verify the reference and benchmark pegs will be made in terms of PSA 8.8.5."

#### **PSA 5.1.2 Preservation and replacement of survey beacons and pegs subject to the Land Survey Act**

Delete from the second sentence "Before the commencement . . . . "to" . . . . apparently in their correct positions" and replace with the following:

"Immediately on taking over the site, the Contractor, in consultation and liaison with the Engineer, shall search for all pegs and the Contractor shall compile a list of pegs that are apparently in their correct position."

Replace the third sentence of Clause 5.1.2 with the following:

“At completion of the Contract, the Contractor shall expose and mark all pegs that were listed at the commencement of the construction as being in order and the Contractor shall arrange with a registered Land Surveyor the replacement of pegs that have become disturbed or damaged. The Contractor shall, as a precedent to the issue of the Certificate of Completion, provide to the Engineer, a certificate from the Registered Land Surveyor, certifying that all the pegs listed at the commencement of construction in accordance with the provisions of this Clause, have been checked and that those found to have been disturbed, damaged or destroyed have been replaced in their correct positions, all in accordance with the provisions of the said Act.

The costs of replacement and certification as aforesaid shall be entirely for the Contractor's account, provided always that the Contractor shall not be held liable for the cost of replacement of pegs which:

- (a) cannot reasonably be re-established in their original positions by reason of the finished dimensions of the Permanent Works; and
- (b) the Contractor can prove beyond reasonable doubt and to the satisfaction of the Engineer, were disturbed, damaged or destroyed by others beyond its control, and
- (c) were in close proximity to the work and which would unavoidably be removed, subject to the Engineer's approval being given to remove such pegs.”

## **PSA 5.2 WATCHING, BARRICADING AND LIGHTING AND TRAFFIC CROSSINGS**

Add the following:

“The Contractor shall comply in all aspects with the requirements of the Occupational Health and Safety Act (Act 85 of 1993), refer also PSA 5.7, PSA 5.9 and PSA 5.10.”

## **PSA 5.3 PROTECTION OF STRUCTURES**

Replace: “Machinery and Occupational Safety Act, 1983, (Act No. 6 of 1983)” with: “Occupational Health and Safety Act, 1993 (Act No. 85 of 1993), as amended,” and insert the following after “(Act No. 27 of 1956)”: “as amended”.

## **PSA 5.4 PROTECTION OF OVERHEAD AND UNDERGROUND SERVICES**

Replace the heading and the contents of Clause 5.4 with the following:

"PSA 5.4 LOCATION AND PROTECTION OF EXISTING SERVICES

### **PSA 5.4.1 Location of existing services**

Before commencing with any work in an area, the Contractor shall ascertain the presence and actual position of all services which can reasonably be expected by an experienced and competent Contractor to be present on, under, over or within the Site.

Without in any way limiting its liability in terms of the Conditions of Contract in relation to damage to property and interference with services, the Contractor shall, in collaboration with the Engineer, obtain the most up-to-date plans as are available, showing the positions of services existing in the area where it intends to work.

Neither the Employer nor the Engineer offer any warranty as to the accuracy or completeness of such plans and because services can often not be reliably located from plans, the Contractor shall ascertain the actual location of services depicted on such plans by means of careful inspection of the Site.

Thereafter, the Contractor shall, by the use of appropriate methodologies, carefully expose the services at such positions as are agreed to by the Engineer, for the purposes of verifying the exact location and position of the services. Where the exposure of existing services involves excavation to expose underground services, the requirements of Clauses 4.4 and 5.1.2.2 of SABS 1200 D (as amended) shall also apply.

The aforesaid procedure shall also be followed in respect of services not shown on the plans but which may reasonably be anticipated by an experienced Contractor to be present or potentially present on the Site.

All services, the positions of which have been determined as aforesaid at critical points, shall henceforth be designated as "Known Services" and their positions shall be indicated by the Contractor on a separate set of Drawings, a copy of which shall be furnished to the Engineer without delay.

As soon as any service which has not been identified and located as described above is encountered on, under, over or within the Site, it shall henceforth be deemed to be a "Known Service" and the aforesaid provisions pertaining to locating, verifying and recording its position on the balance of the Site shall apply. The Contractor shall notify the Engineer immediately should any such service be encountered or discovered on the Site.

Whilst it is in possession of the Site, the Contractor shall be liable for all loss of or damage as may occur to:

- (a) Known Services, anywhere along the entire lengths of their routes, as may reasonably be deduced from the actual locations at which their positions were verified as aforesaid, due cognisance being taken of such deviations in line and level which may reasonably be anticipated; and
- (b) any other service which ought reasonably to have been a Known Service in accordance with the provisions of this Clause;

as well as for consequential damage, whether caused directly by the Contractor's operations or by the lack of proper protection ; provided always that the Contractor will not be held liable in respect of damages occurring to services not being Known Services.

No separate payment will be made to the Contractor in respect of any costs incurred in preparing and submitting to the Engineer, the Drawings as aforesaid and these costs shall be deemed included in the Contractor's other tendered rates and prices included in the Contract.

Payment to the Contractor's in respect of exposing services at the positions agreed by the Engineer and as described above will be made under the payment items (if any) as may be provided therefore in the respective sections of the Specifications pertaining to the type of work involved.

**PSA 5.4.2     Protection during construction**

The Contractor shall take all reasonable precautions and arrange its operations in such a manner as to prevent damage occurring to all known services during the period which the Contractor has occupation and/or possession of the Site.

Services left exposed shall be suitably protected from damage and in such a manner as will eliminate any danger arising there from to the public and/or workmen, all in accordance with the requirements of the prevailing legislation and related regulations.

**PSA 5.4.3     Alterations and repairs to existing services**

Unless the contrary is clearly specified in the Contract or ordered by the Engineer, the Contractor shall not carry out alterations to existing services. When any such alterations become necessary, the Contractor shall promptly inform the Engineer, who will either make arrangements for such work to be executed by the owner of the service, or instruct the Contractor to make such arrangements himself.

Should damage occur to any existing services, the Contractor shall immediately inform the Engineer, or when this is not possible, the relevant authority, and obtain instructions as to who should carry out repairs. In urgent cases, the Contractor shall take appropriate steps to minimise damage to and interruption of the service. No repairs of telecommunication cables or electric power lines and cables shall be attempted by the Contractor, unless approved by the Engineer.

The Employer will accept no liability for damages due to a delay in having alterations or repairs effected by the respective service owners. The Contractor shall provide all reasonable opportunity, access and assistance to persons carrying out alterations or repairs of existing services."

**PSA 5.7     SAFETY**

Replace the contents of subclause 5.7 with the following:

"Pursuant to the provisions of the Conditions of Contract, and without in any way limiting the Contractor's obligations there under, the Contractor shall at his own expense (except only where specific provision (if any) is made in the Contract for the reimbursement to the Contractor in respect of particular items), provide the following:

- (a) Provide to its Employees on the site of the works, all safety materials, clothing and equipment necessary to ensure full compliance with the provisions of the Occupational Health and Safety Act (Act No 85 of 1993) and associated Regulations as amended (hereinafter referred to as the Act) at all times, and shall institute appropriate and effective measures to ensure the proper usage of such safety materials, clothing and equipment at all times; and
- (b) Provide, install and maintain all barricades, safety signage and other measures to ensure the safety of workmen and all persons in, on and around the site, as well as the general public; and

- (c) Implement on the site of the works, such procedures and systems and keep all records as may be required to ensure compliance with the requirements of the Act at all times; and
- (d) Implement all necessary measures so as to ensure compliance with the Act by all subcontractors engaged by the Contractor and their employees engaged on the works; and
- (e) Full compliance with all other requirements pertaining to safety as may be specified in the Contract.
- (f) Specialised Security Services for the protection of workers from gang wars while conducting work on site. *Reference must be made to section 8 of the Occupational Health and Safety Act 85 of 1993.*

The Employer shall in terms of the Regulations make such inspections on the site, as they shall deem appropriate, for the purpose of verifying the Contractor's compliance with the requirements of the Act. For this purpose, the Contractor shall grant full access to the site of all parts of the site and shall co-operate fully in such inspections and shall make available for inspection all such documents and records as the Employer's representative may reasonably require.

Where any such investigations reveal, or where it comes to the Employer's attention that the Contractor is in any way in breach of the requirements of the Act or is failing to comply with the provisions of this clause, the Engineer shall, in accordance with the provisions of Clause 5.11 of the Conditions of Contract, be entitled to suspend progress on the works or any part thereof until such time as the Contractor has demonstrated to the satisfaction of the Employer, that such breach has been rectified.

The Contractor shall have no grounds for a claim against the Employer for extension of time and/or additional costs if the progress on the works or any part thereof is suspended by the Engineer in terms of this clause, and the Contractor shall remain fully liable in respect of the payment of penalties for late completion in accordance with the provisions of Clause 5.13 of the Conditions of Contract should the Contractor fail to complete the Works on or before the specified due completion date in consequence of the suspension.

Persistent and repeated breach by the Contractor of the requirements of the Act and/or this clause shall constitute grounds for the Engineer to act in terms of Clause 9.12 of the Conditions of Contract and for the Employer to terminate the Contract in accordance with the further provisions of the said Clause 55."

#### **"PSA 5.9\*      MAINTAINING SERVICES IN USE**

The Contractor shall take note that he shall not cut off any service in use without the prior approval of the Engineer and the knowledge of the residents. Further, no existing services in use shall remain cut off for more than 8 hours or overnight.

Failure on the part of the Contractor to comply with any of the above provisions will constitute sufficient reason for the Engineer to stop the works until the situation has been remedied, or should he deem it necessary, arrange for the situation to be remedied at the Contractor's cost.

No direct payment will be made for the cost of maintaining services in use. Payment will be deemed to be covered by the rates and sums tendered and paid for the various items of work included under the Contract."

## **"PSA 5.10\* DEALING WITH AND ACCOMMODATING TRAFFIC**

The Contractor shall take note that the existing roads and pedestrian walkways within the Site, shall remain operational throughout the contract period as set out earlier in the document. To this end the Contractor shall provide and maintain all temporary fences, security, barriers, kerb ramps, signs, markings, flagmen, drums, lighting, personnel and all other incidentals necessary to ensure safe and easy passage of all traffic.

Traffic accommodation and signage shall be erected and maintained by the Contractor and the number and layout of the traffic signs shall comply with the South African Development Community's South African Road Traffic Signs Manual, Volume 2 – Chapter 13, Roadworks Signing.

Traffic signs shall have a yellow background with either a red / black border.

No direct payment will be made for the cost of dealing with and accommodating traffic. Payment will be deemed to be covered by the rates and sums tendered and paid for the various items of work included under the contract. Further, the provision of PSA 5.2 shall apply."

## **"PSA 5.11\* SITE MEETINGS**

The Contractor or its authorised agent will be required to attend regular site meetings, which shall normally be held once a month on dates and at times determined by the Engineer, but in any case whenever reasonably required by the Engineer. Unless otherwise indicated in the Contract or instructed by the Engineer, such meetings shall be held at the Contractor's offices on the Site. At such monthly meetings, matters such as general progress on the Works, quality of work, problems, claims, payments, and safety etc, shall be discussed, but not matters concerning the day-to-day running of the Contract.

## **"PSA 5.12\* PROVIDING ACCESS TO ERVEN AND PROPERTIES**

Access to erven and properties along the route of trenches and roads shall be provided by the Contractor at all times as indicated earlier in the document. To this end suitable crossings shall be constructed where required.

Temporary crossings shall be in the form of portable bridges, temporary backfill or other approved means and shall be capable of permitting the safe passage of all vehicles and pedestrians. The Contractor shall also be responsible for maintaining crossings and for removing same when they are no longer required.

If as a result of restricted road reserve widths and the nature of the Works the construction of bypasses is not feasible, construction shall be carried out under traffic in order to provide access to the properties.

The Contractor may, with the approval of the Engineer, arrange with the occupiers of the affected properties to temporarily close off a portion of a road, footpath entrance, property access road or other access, provided that the Contractor shall give due notice of the intended closure and its probable duration to the occupiers and shall as punctually as possible re-open the route at the prescribed time. Where possible, roads shall be made safe and re-opened to traffic overnight. Any such closure shall be an arrangement between the Contractor and the occupiers and shall not absolve the Contractor from his obligations under the Contract to provide access at all times.

Barricades, traffic signs and drums shall be provided by the Contractor to suit the specific conditions.

No direct payment will be made for the cost of providing access. Payment will be deemed to be covered by the rates and sums tendered and paid for the various items of work included under the Contract."

#### **"PSA 5.13\* ACCOMMODATION OF OTHER CONTRACTORS**

The Contractor shall be required to accommodate other contractors on the Site of the Works during the entire Contract period.

Adequate access to the site of their works shall be given the contractors at all times.

No direct payment will be made for the cost of providing adequate access and accommodating the stated contractors on the Site of the Works, as well as the cost of any inconvenience or disruption experienced in attending to the aforementioned. Payment shall be deemed to be covered by the rates and sums tendered and paid for the various items of work included under the Contract.

#### **"PSA 5.14\* ENVIRONMENTAL MANAGEMENT PLAN, RECORD OF DECISION AND SPECIFICATIONS**

The Contractor shall be required to comply with and assume responsibility for compliance with the National Environmental Management Act, (Act 107 of 1998) in respect of the execution and completion of the Works.

Non-compliance in any way whatsoever will be adequate reason for the suspension of the Works.

No extension of time will be considered for delays due to non-compliance with the abovementioned.

No direct payment will be made for the cost of complying with the above-mentioned or disruption experienced in attending to the aforementioned. Payment shall be deemed to be covered by the rates and sums tendered and paid for the various items of work included under the Contract. (Refer also to the contents of Clause 4.3 of the Conditions of Contract."

#### **PSA 6 TOLERANCES**

##### **"PSA 6.4\* USE OF TOLERANCES**

No guarantee is given that the full specified tolerances will be available independently of each other, and the Contractor is cautioned that the liberal or full use of any one or more of the tolerances may deprive him of the full or any use of tolerances relating to other aspects of the work.

Except where the contrary is specified, or when clearly not applicable, all quantities for measurement and payment shall be determined from the 'authorized' dimensions. These are specified dimensions or those shown on the Drawings or, if changed, as

finally prescribed by the Engineer, without any allowance for the specified tolerances. Except if otherwise specified, all measurements for determining quantities for payment will be based on the 'authorized' dimensions.

If the work is constructed in accordance with the 'authorised' dimensions plus or minus the tolerances allowed, the calculation of quantities will be based on the 'authorised' dimensions, regardless of the actual dimensions to which the work has been constructed.

When the work is not constructed in accordance with the 'authorised' dimensions plus or minus the tolerances allowed, the Engineer may nevertheless, at his sole discretion, accept the work for payment. In such cases no payment shall be made for quantities of work or material in excess of those calculated for the 'authorised' dimensions, and where the actual dimensions are less than the 'authorised' dimensions minus the tolerance allowed, quantities for payment shall be calculated based on the actual dimensions as constructed."

## **PSA 7            TESTING**

### **PSA 7.1        PRINCIPLES**

#### **PSA 7.1.2      Standard of Finished Work Not to Specification**

Insert the words "or checks by an approved laboratory ..." after the words "Where the Engineer's checks ..." in the first line of Clause 7.1.2.

### **PSA 7.2        APPROVED LABORATORIES**

Replace the contents of Clause 7.2 with the following:

"Unless otherwise specified in the relevant specification or elsewhere in the Scope of Work, the following shall be deemed to be approved laboratories in which design work, or testing required in terms of a specification for the purposes of acceptance by the Engineer of the quality of materials used and/or workmanship achieved, may be carried out:

- (a) any testing laboratory certified by the South African National Accreditation Systems (SANAS) in respect of the nature and type of testing to be undertaken for the purposes of the Contract;
- (b) any testing laboratory owned, managed or operated by the Employer or the Engineer;
- (c) any testing laboratory established and operated on the Site by or on behalf of the Employer or the Engineer;
- (a) any testing laboratory designated by the Engineer."



**PSA 8 MEASUREMENT AND PAYMENT**

**PSA 8.1 MEASUREMENT**

**PSA 8.1.1 Method of measurement, all sections of the Schedule**

Delete the words "and South West Africa".

**PSA 8.1.2 Preliminary and General item or section**

**PSA 8.1.2.1 Contents**

Replace the contents of item (c) with the following:

"The 'duration of construction' applicable to a time-related item shall be the tendered contract period for the total works, plus as applicable, the Civil Engineering Industry Holiday (Dec / Jan) and all gazetted public holidays for the Civil Engineering Industry."

**PSA 8.1.2.2 Tendered sums**

Replace the contents of this Sub-Clause with the following:

"Except only where specific provision is made in the Specifications and/or the Bill of Quantities for separate compensation for any of these items, the Contractor's tendered sums under items PSA 8.3.1 and PSA 8.4.1 shall collectively cover all charges for:

- risks, costs and obligations in terms of the Conditions of Contract and of this standardized specification; and
- Specialised Security Services for the protection of workers from gang members
- head-office and site overheads and supervision; and
- profit and financing costs; and
- expenses of a general nature not specifically related to any item or items of the permanent or temporary work; and
- providing such facilities on site as may be required by the Contractor for the proper performance of the Contract and for its personnel, including, but without limitation, providing offices, storage facilities, workshops, ablutions, services such as water, electricity, sewage and rubbish disposal, access roads and all other facilities required, as well as for the maintenance and removal on completion of the works of these facilities and cleaning-up of the site of the Contractor's establishment and reinstatement to not less than its original condition, and
- providing the facilities for the Engineer and his staff as specified in the Contract and their removal from the site on completion of the Contract."
- A detailed mitigating strategy as an addendum providing description of how the effects of gangsterism and related activities will be addressed to ensure a successful implementation of the project. This must detail all the manpower, resources, tools, equipment, etc. necessary to deliver the objectives of the strategy.
- Specialised Security Services to deal with the adverse impact of gangsterism on both the staff and works as far is reasonably foreseeable and practicable.

**PSA 8.2 PAYMENT**

**PSA 8.2.2 Time-related items**

Replace the contents of Clause 8.2.2 with the following:

"Subject to the provisions of sub clauses 8.2.3 and 8.2.4, payment under item 8.4.1 (time-related item) will be made monthly in equal amounts, calculated by dividing the sum tendered for the item by the tendered Contract period in months, provided always that the total of the monthly amounts so paid for the item is not out of proportion to the value of the progress of the Works as a whole.

Should the Engineer grant an extension of time for the completion of the total works, the Contractor will be entitled to an increase in the sums tendered for time-related items, which increase shall be in the same proportion to the original tendered sums, as the extension of time is to the duration of construction as defined in PSA 8.1.2.1. The Contractor shall however note that the aforementioned will not apply to extensions of time granted in terms of PSA 8.4.6.

Payment of such increased sums will be taken to be as full compensation for all additional preliminary and general costs, either time-related costs or fixed costs that result from the circumstances pertaining to the extension of time granted."

The payment to the Contractor for Time-Related Items shall be adjusted in accordance with the following formula in the event of the Contract being extended by means of a Variation Order:

Sum of Tendered amounts for Time Related Items x

Extension of Time authorised by Variation Order

Tender Contract period

For the purposes of applying this formula "Extension of Time" will exclude the Contractor's December / January close-down period, if applicable.

The abovementioned adjustment of the payment for Time-Related Items shall be made in the completion Payment Certificate and shall be the only payment for additional Time-Related costs irrespective of the actual period required to complete the Contract including its authorised extensions.

In the case of fixed price contracts, the amount by which the Time-Related Items is adjusted shall not be subject to the Contract Price Adjustment formula. Similarly, in the case of contracts subject to Contract Price Adjustment the amount by which the time-related items are adjusted shall be subject to the Contract Price Adjustment formula."

**PSA 8.3 SCHEDULED FIXED-CHARGE AND VALUE RELATED ITEMS**

**PSA 8.3.1 Contractual requirements**

Add the following:

"The sum tendered shall cover all costs incurred in complying with the requirements of the Conditions of Contract, the Scope of Work as well as the fixed costs applicable to the obligations and requirements applicable to the Micro Enterprises Subcontract work as detailed under C3.3: Procurement and C3.5 Management of Part 3: Scope of Work, including the calling and evaluations of such tenders.

The sum shall cover the required security services necessary for the protection of all workers against gang related conflict during work hours for the duration of the contract.

Where applicable in terms of the Contract, the sum tendered shall include for the cost of providing and maintaining the special risks insurance stipulated in the Conditions of Contract."

**PSA 8.3.2.1 Facilities for Engineer**

Replace the contents of this Clause with the following:

"(a) Two Contract Nameboards .....Unit: Sum

(b) One Furnished Office .....Unit: Sum

The facilities provided shall comply with the applicable requirements of SABS 1200 AB and PSAB."

**PSA 8.3.2.2 Facilities for Contractor**

Notwithstanding the detail breakdown of items provided (items a to j), a single sum shall be tendered to cover all these items under the heading of "Facilities for Contractor" and shall include facilities for the Subcontractors.

The necessary Specialised Security Services shall be deployed at each facility for the duration of the contract to the extent that it is required and practically implementable.

**PSA 8.3.3 Other Fixed-charged Obligations**

Add the following:

"The sum tendered shall in addition cover the fixed costs of all obligations and requirements applicable to the subcontract work as detailed under C3.3: Procurement and C3.5 Management of Part 3: Scope of Work."

**PSA 8.4 SCHEDULED TIME RELATED ITEMS**

**PSA 8.4.1 Contractual requirements .....Unit: Sum**

Add the following:

"The sum tendered shall cover all costs incurred in complying with the requirements of the Conditions of Contract, the Scope of Work as well as any time-related costs applicable to the obligations and requirements applicable to the Subcontract work as

detailed under C3.3: Procurement and C3.5 Management of Part 3: Scope of Work, including the calling and evaluations of such tenders.

The sum shall also cover the necessary Specialised Security Services required to provide a safer working environment for the workers for the duration of the contract.

Where applicable in terms of the Contract, the sum tendered shall include for the cost of providing and maintaining the special risks insurance stipulated in the Conditions of Contract.

The sum shall further cover all the time-related establishment costs and be the full compensation to the Contractor for:

- (i) The maintenance of his whole organisation as established for this Contract.
- (ii) The maintenance of all insurances, indemnities and guarantees required in terms of the Conditions of Contract, where applicable.
- (iii) Compliance with all general conditions and requirements which are not specifically measured elsewhere for payment in these Contract Documents.

Payment shall be made monthly in compliance with the method laid down in PSA 8.2.2.

The Contractor will not be paid Time-Related Preliminary and General Charges for any special non-working days, as stipulated in the Conditions of Contract, which shall be deemed to have been allowed for within his rates."

#### **PSA 8.4.2.1      Facilities for Engineer**

Replace the contents of this Clause with the following:

- "(a)      Two Contract Nameboards ..... Unit: Sum
- (b)      One Furnished Office ..... Unit: Sum
- (c)      Survey labourers ..... Unit: Labourer Month

The facilities provided shall comply with the applicable requirements of SABS 1200 AB and PSAB.

Payment for the provision of survey labourers will be made pro-rata the period the labourers are provided."

#### **PSA 8.4.2.2      Facilities for Contractor**

Notwithstanding the detail breakdown of items provided (items a to j), a single sum shall be tendered to cover all these items under the heading of "Facilities for Contractor" and shall include facilities for the Subcontractors.

The necessary Specialised Security Services shall be deployed at each facility for the duration of the contract to the extent that it is required and practically implementable.

#### **PSA 8.4.2.3      Replace the words "periods stated" in the second line of this Clause with the following:**

"duration of construction as defined in PSA 8.1.2.1".

**PSA 8.4.5      Other Time-related Obligations**

Add the following:

"The sum tendered shall in addition cover the time-related costs of all obligations and requirements applicable to the subcontract work as detailed under C3.3 Procurement and C3.5 Management of Part 3: Scope of Work."

The sum shall also cover the cost of Specialised Security Services deployed at each facility for the duration of the contract to the extent that it is required and practically implementable.

**"PSA 8.4.6\*      Compensation in terms of Subclause 5.12.2.4 and Clause 9.1 of the Conditions of Contract for delays incurred:**

(a) Plant..... Unit: Sum per working day

(b) Labour ..... Unit: Sum per working day

(c) Supervision..... Unit: Sum per working day

(d) Other services, facilities etc. not covered by

      (a), (b) and (c) ..... Unit: Sum per working day

The sum tendered for each item shall cover the full and final standing cost per day of delaying the specified resource or facility and no additional compensation shall apply, notwithstanding any provisions to the contrary in the contract documents, or in respect of any extension of time granted in relation to the circumstances described in Subclauses 5.12.2.4 and 9.1 of the Conditions of Contract.

For the purposes of calculating the total delay, a working week shall be held to consist of five working days and a working day 9 hours.

Payment for the partial standing of any of the scheduled resources for a day or part thereof, or the standing of a complete resource for a part day, will be made pro-rata in proportion to an appropriate factor assessed by the Engineer.

The amount by which compensation for delays is adjusted shall be subject to the contract price adjustment formula as defined in the Conditions of Contract.

This payment item shall only apply to delays which in the opinion of the Engineer are due to the circumstances described in Subclauses 5.12.2.4 and 9.1 of the Conditions of Contract. No Payment will be made for any salary related or other internally caused strikes. The cost of delays incurred for all other circumstances shall be treated as provided for in the Conditions of Contract.

The provision of this Clause shall in no way prejudice the right of either the Employer or the Contractor to determine the Contract in terms of the provisions of Clause 9.1 of the Conditions of Contract.

The Contractor shall take note that no payment will be considered for any additional cost incurred in protecting his plant and site establishment, as well as for costs incurred in respect of damage to constructional plant and equipment."

## **PSA 8.5 SUMS STATED PROVISIONALLY BY THE ENGINEER**

Replace the contents of Clause 8.5 with the following:

### **"PSA 8.5.1 Works Executed by the Contractor ..... Unit: Prov Sum**

Note that these Provisional Sums are allocated for anticipated work that must be executed by the Contractor and which, at tender stage, could not have been determined or quantified. Refer Clause 6.6 of the Conditions of Contract.

The work identified and stated will not constitute a variation in terms of the Contract although the value of such work will be determined in accordance with the principals pertaining to the value of a Variation Order as set out in Clause 6.4 of the Conditions of Contract.

The Contractor will be reimbursed in substitution of the Provisional Sums (if any) allowed in the Bill of Quantities for work to be executed by the Contractor, in the amounts determined in accordance with the provisions of Clauses 6.4 and 6.6.1 of the Conditions of Contract.

The description of the payment item in the Bill of Quantities will specify and dictate the work to be executed."

### **"PSA 8.5.2\* Additional testing required by the Engineer ..... Unit : Provisional Sum**

The provisional sum provided in the Schedule of Quantities is to cover the payment of the SANAS registered soils Laboratory to conduct CBR, MOD's and Atterberg Limit tests as directed by the Engineer."

### **PSA 8.5.3\* Overhead, charges, profit etc on item PSA 8.5.2 ..... Unit : %**

The percentage tendered shall be paid to the Contractor on the actual amount paid to the soils laboratory and shall cover the following:

- all costs involved in rectifying and arranging the tests with the laboratory.
- setting out the positions for the tests to be taken by the laboratory as indicated by the Engineer.
- making good all test holes with subbase.
- the cost of all overheads, charges and profits

### **PSA 8.5.4\* Payment to service providers for relocation of services ... Unit : Provisional Sum**

The provisional sum provided in the Schedule of Quantities is to cover the costs of payment to the NMBM Electrical Department and/or Telkom for relocation of services. Payment will only be made under this item if prior approval, based upon written quotes from the relevant service providers, was obtained from the Engineer to relocate the relevant services.

### **PSA 8.5.5\* Overhead, charges, profit etc on item PSA 8.5.4 ..... Unit : %**

The percentage tendered shall be paid to the Contractor on the actual costs paid to service providers.

## **“PSA 8.6 PRIME COST ITEMS**

### **PSA 8.6.1 Prime Cost Sums**

- (a) Description of Item to which Prime Cost Sum Applies ..... Unit: PC Sum
- (b) Charge Required by Contractor on Sub-item (a) above ..... Unit: %

Refer Clause 6.6 of the Conditions of Contract.

Sub-items (a) and (b) will be provided in the Bill of Quantities for each different item to which a Prime Cost Sum applies.

The Contractor shall be reimbursed under sub-item(s) (a) in substitution of the respective Prime Cost Sums included in the Contract, the actual price(s) paid or payable by him in respect of the goods, materials or services supplied, but excluding any charges for the Contractor's labour, profit, carriage, establishment or other charges related to such goods, services or materials, all in accordance with the provisions of Clause 6.6.2 of the Conditions of Contract.

The description of the payment item in the Bill of Quantities will specify and dictate the work to be executed.

The Contractor shall be paid under sub-item (b), the respective percentage, as stated by the Contractor in its Tender, of the amount certified by the Engineer for payment under the related sub-item (a). The percentages tendered by the Contractor for each respective sub-item (b) included in the Bill of Quantities shall be deemed to in full and final compensation to the Contractor in respect of any charge by the Contractor for labour, carriage profit, establishment and for any other charges related to the goods, services or materials supplied under the related sub-item (a).

If the Contractor shall have omitted within its Tender to insert a tendered percentage under sub-item (b), or tendered a zero percentage, the Contractor's tendered rate for sub-item (b) shall be deemed to be zero and the Contractor shall not be entitled to any payment under sub-item (b).

Only payments for successful test will be made under the Prime Cost Sum provided in the Bill of Quantities for acceptance control testing by the Engineer.

The Contractor is responsible for the cost of all process control testing. Payment in terms of the above will only be made for acceptance control testing specifically ordered and specified by the Engineer.”

## **“PSA 8.7 DAYWORK**

Add the following:

"To ensure that the plant is achieving a reasonable output of work, the Engineer's personnel will randomly monitor and measure work produced. Poor performance of any item of plant will be noted by the Engineer and certain reductions in payment may be applied.

Furthermore, should the performance of a machine be poor, or persistently break down, the Engineer may order that it be replaced, all at the cost of the Contractor."

**PSA 8.8            TEMPORARY WORKS**

**PSA 8.8.2        Dealing with Traffic**

Delete the entire Clause. The provision of PSA 5.10 shall apply. Refer also PSA 5.2, PSA 5.3, PSA 5.7 and PSA 5.12”

**PSA 8.8.4        Existing services**

Replace the heading of paragraph (c) with the following:

“c) Excavate by hand in soft material to expose existing services ..... Unit: m<sup>3</sup>

Add the following:

"The rate tendered for (c) shall further cover the cost of backfilling the excavation with excavated material compacted to 90% of modified AASHTO maximum density, loading, transporting within a free haul distance of 0,5 km and disposing of surplus material as directed, keeping the excavation safe, dealing with water, protecting the exposed services, and any other operation necessary to complete the work.

No distinction will be made between the various types of services to be exposed, or the depths to which excavations are taken.

Excavation in excess of that authorised will not be measured for payment."

**PSA 8.8.5        Cost of survey in terms of Land Survey Act**

Replace the contents of subclause 8.8.5 with the following:

"(a) Locate, record and protect erf boundary and survey pegs .....Unit: Sum

The sum tendered shall cover the cost of complying with the requirements of 5.1.2 and PSA 5.1.2 as well as the cost of exposing and marking the pegs on completion of the Works.

(b) Replace pegs recorded as missing at commencement of Contract as well as pegs removed in terms of PSA 5.1.2 (a), (b) and (c)..... Unit: No

The rate tendered shall cover the cost of arranging for a registered surveyor to replace the pegs, as well as the payment of the surveyor. The Contractor shall however note that pegs recorded as missing at the start of the work and subsequently found by the surveyor to be in their correct position will not be measured for payment.

**NOTE:**

The cost to set out the Works in terms of 5.1.1 and PSA 5.1.1 shall be deemed to be covered by the sums tendered for other obligations under Subclauses 8.3.3 and 8.4.5.”



**“PSA 8.8.7\* Compliance with the occupational health and safety act (Act 85 of 1993) and all relevant and applicable regulations, especially the construction regulations, 2014 as promulgated on 7 February 2014 under Section 43 of the occupational health and safety act (Act 85 of 1993), as amended from time to time, for the duration of the contract**

- (a) Contractor ..... Unit: Sum
- (b) Subcontractors (own)/Micro Enterprises (smme's)..... Unit: Sum
- (c) Specialised Security Services for (a) and (b)..... Unit: Sum

The tendered sums shall include full compensation to the Contractor for compliance with all the requirements of the OHS Act and the Construction Regulations 2014 at all times, as described in the Scope of Work and Employer's health and safety specification (Refer Particular Specification PA). The successful tenderer shall provide the Engineer with a complete breakdown of each tendered sum, if so required.

The Contractor shall appoint a full-time Construction Health and Safety Officer (CHSO) registered with the Statutory Body approved by the Chief Inspector as stipulated in the Construction Regulations 2014. *Reference must be made to Section 21 of the Project Relevant Health and Safety Specification.*

The Contractor shall provide Specialised Security Services to mitigate against adverse impact on the project resulting from gangsterism and related activities. The Contractor shall clearly outline all the manpower, resources, tools, equipment, vehicles etc. necessary to effectively deliver the objectives of security on site.

The Contractor shall note that all obligations contained in the Act, Regulations and Employers health and safety specification shall be included in this item. No additional claims will be considered; neither will an extension of time be considered for delays due to non-compliance with the Contractor's health and safety plan.

The sums will be paid to the Contractor in equal monthly amounts.  
Refer also PSA 5.2, PSA 5.3, PSA 5.7 PSA 5.10, PSA 5.12, PSA 5.13 and PSA 5.14”

**PSAB            ENGINEER'S OFFICE**

**PSAB 3        MATERIALS**

**PSAB 3.1     NAMEBOARDS**

Notwithstanding the provisions of this Sub-Clause, two Contract Nameboards shall be provided. The nameboards shall further comply with regard to size, painting, decorating and detail as detailed on the drawings.

Add the following:

“In addition, the Contractor shall provide and erect one Identity Boards in accordance with Drawing PSA 3 of Standard Infrastructure Details dated July 2007. They shall be placed and moved, as directed by the Engineer.”

**PSAB 3.2     OFFICE BUILDING(S)**

The Engineer will not require an office on site.

## **PSAB 4 PLANT**

### **PSAB 4.1 TELEPHONE**

A dedicated telephone for the Engineer's use is not required. The Contractor's site telephone facilities shall be made available to the Engineer, or his representative, as and when required.

## **PSAB 5 CONSTRUCTION**

### **PSAB 5.1 NAMEBOARDS**

Replace the contents of this Clause with the following:

"The Contract Nameboard shall be erected within fourteen days of the Commencement Date and shall be placed where ordered. Any damage to this board shall be repaired within seven days of a written instruction issued by the Engineer.

Further to the above the Contractor will not be allowed to erect more than two of his own nameboards in the area of the Works. The position of these shall be agreed to by the Engineer. No payment will be made for the supply, erection or maintenance of the Contractor's nameboards and the Engineer reserves the right to order the removal of the nameboards if not properly maintained.

All nameboards shall be removed within 7 days of the issue of the "Certificate of Completion".

### **PSAB 5.4 TELEPHONE**

Delete the entire contents of this Clause.

### **PSAB 5.5 SURVEY ASSISTANTS**

A survey assistant will be required from time to time to assist the Engineer's Representative.

## **PSAB 8 MEASUREMENT AND PAYMENT**

Delete the contents of this Clause. The appropriate measurement and payment clauses have been included under Clause 8 of SABS 1200 A and PSA.

## **PSC SITE CLEARANCE**

### **PSC 3 MATERIALS**

#### **PSC 3.1 DISPOSAL OF MATERIAL**

Delete the first two sentences of this clause and replace with:

"Debris arising from clearing and grubbing operations or from the demolition of structures on site shall be removed by the Contractor and disposed of at the Arlington tip site or any other alternate approved tip site.

The rates tendered for the various items under this section shall further cover the cost of loading, transporting and disposing of material at the approved tip site as well as for any fees payable."

## **PSC 5 CONSTRUCTION**

### **PSC 5.3 CLEARING**

Add the following after subclause f):

"g) The clearing, breaking up, removal and spoiling of all concrete, brick-paved or bitumen surfaced slabs, walkways and roadways as well as any obstructions, concrete edging, slabs, playground equipment, bollards and other unwanted debris within the road verges and park areas."

### **PSC 5.5 RECLEARING OF VEGETATION**

Add the following:

"Except if otherwise agreed, where areas have to be re-cleared on the written instruction of the Engineer, such re-clearing shall be carried out at the Contractor's own cost and the Contractor is advised therefore, not to clear areas at such an early stage that re-clearing may become necessary."

## **PSC 8 MEASUREMENT AND PAYMENT**

### **PSC 8.1 BASIC PRINCIPLES**

Add the following:

"The thickness layer that will unavoidably be stripped during clearing of vegetation will be taken as 100mm.

This implies that levels used in earthworks quantity calculations shall be 100mm lower than the original levels excluding stripping of topsoil to stockpile, where applicable."

Levels to be used for earthworks quantity calculations will be surveyed once the clearing operations have been completed."

### **PSC 8.2 PAYMENT**

#### **PSC 8.2.1 Clear and grub**

Replace the first line with the following:

"The areas designated by the Engineer to be cleared and grubbed will be measured in square metre or to the nearest square metre or,"

Delete "(except where 8.2.9 is applicable)" in the seventh line of this Clause.

Add the following:

"The tendered rate shall also cover the cost of loading, transporting and disposing of all rubble, spoil and other unwanted debris encountered in the parks, road reserves or

along service routes, irrespective of distance. Electrical duct must be jet clean with draw wire replaced and all sand/silt to be cleaned from the inside of the duct. Areas to receive artwork must be cleaned with a pressure cleaner (Refer also PSC 8.1)”

**PSC 8.2.8     Demolish and remove structures / buildings and dismantle steelwork, etc.**

Add the following:

“The sum tendered shall cover all costs for the provision of labour, equipment and incidentals necessary to demolish, remove, transport and dispose of the scheduled structures / buildings, including foundations, at an approved tip site.”

**PSC 8.2.9     Transport material and debris to unspecified sites and dump**

Delete this subclause.

Notwithstanding the fact that a disposal site will not be designated by the Engineer, the transportation of all material and debris generated by any clearing and grubbing operations, will not be measured for payment.”

**“PSC 8.2.11\*   Remove and dispose of existing concrete kerbing and channelling combination ..... Unit: m**

The rate tendered shall cover the provision of all labour and equipment necessary to remove, transport and dispose of existing concrete kerbing and channelling combination, including backing and screed, at an approved tip site, regardless of volume and the type kerbing.

**PSC 8.2.12\*   Remove and dispose of existing concrete kerbing                      Unit: m**

The rate tendered shall cover the provision of all labour and equipment necessary to remove, transport and dispose of existing concrete kerbing, including backing and screed, at an approved tip site, regardless of volume and the type kerbing.

**PSC 8.2.13\*   Saw-cut asphalt surfacing ..... Unit: m**

The rate tendered shall cover the provision of all labour and equipment necessary to saw-cut asphalt surfacing to a minimum depth of 50 mm.

**PSC 8.2.14\*   Remove and dispose of existing asphalt and bituminous surfacing ..... Unit: m<sup>2</sup>**

The rate tendered shall cover the provision of all labour and equipment to remove, transport and dispose of all existing asphalt and bituminous surfacing at the approved tip site (saw-cutting will be compensated for under item PSC 8.2.13).

Where existing bituminous sidewalks are retained with concrete edge strips, the rate under this item shall include for the removal and spoiling of such.

No separate payment will be made under PSC 8.2.12.

**PSC 8.2.15\*   Saw-cut concrete in roadway / sidewalks ..... Unit: m**

The rate tendered shall cover the provision of all labour and equipment to saw-cut concrete surfacing to a minimum depth of 250 mm.

**PSC 8.2.16\* Remove and dispose of concrete surfacing (up to a thickness of 250 mm) .....**

Unit: m<sup>2</sup>

The tendered rate shall cover the provision of all labour and equipment to remove, transport and dispose of concrete surfacing at the approved tip site (saw-cutting will be compensated for under item PSC 8.2.16).

**PSC 8.2.17\* Remove and dispose of existing brickwork (up to a thickness of 300 mm) .....**

Unit: m<sup>2</sup>

The sum tendered shall cover the provision of all labour and equipment to remove on the instruction of the Engineer, transport and dispose of existing brickwork at the approved tip site.

The rate shall be based on brickwork with a wall thickness of 300 mm."

**PSD            EARTHWORKS**

**PSD 2        INTERPRETATIONS**

**PSD 2.1     SUPPORTING SPECIFICATIONS**

Replace Clause 2.1.2 with the following:

"PSD 2.1.2:            Any of the other SABS 1200 Specifications or Particular Specifications may form part of the Contract Documents."

**PSD 2.3     DEFINITIONS**

Replace the word and the definition for "borrow" with the following:

"Borrow material: Material, other than material obtained from excavations required for the Works, obtained from sources such as borrow pits or the authorised widening of excavations. 'Borrow' shall have a corresponding meaning."

Replace the definition for "specified density" with the following:

"Specified density: The specified dry density expressed as a percentage of modified AASHTO dry density."

Replace the definition for "stockpile" with the following:

"Stockpile (verb): The process of selecting and, when necessary, loading, transporting and off-loading material in a designated area for later use for a specific purpose."

Add the following definitions:

"Commercial Source: A source of material provided by the Contractor, not the Employer, and including any borrow pit, provided by the Contractor.

Fill: An embankment or terrace constructed of material obtained from excavations or borrow pits.

Fill (material): Material used for the construction of an embankment or terrace.

Roadbed: The natural in situ material on which the fill, or in the absence of fill, the pavement layers, are constructed."

### **PSD 3 MATERIALS**

#### **PSD 3.1 CLASSIFICATION FOR EXCAVATION PURPOSES**

##### **PSD 3.1.1 Method of Classifying**

Add the following:

"The classification of material other than 'soft excavation' shall be agreed upon before excavation may commence.

The Contractor shall immediately inform the Engineer if and when the nature of the material being excavated changes to such an extent that a new classification is warranted for further excavation. Failure on the part of the Contractor to advise the Engineer in good time shall entitle the Engineer to reclassify, at his discretion, such excavated material."

##### **PSD 3.1.2 Classes of excavation**

Notwithstanding the provisions of this subclause no distinction will be made between soft and intermediate excavation. All excavation, other than in hard rock and boulder excavation, shall for measurement and payment purposes be classified as soft excavation.

##### **PSD 3.2.1 Material suitable for embankments and terraces**

Add the following to paragraph (b):

Provided sufficient fines are mixed with the rock to ensure a dense compacted mass can be achieved.

##### **PSD 3.2.3 Material Suitable for Backfill or Fill against Structures**

Replace the contents of this sub-clause with the following:

"Material used for backfill behind structures shall generally be the material excavated, subject to the following conditions:

- (a) The material shall not contain an excessive number of stones retained on a 50 mm sieve; and
- (b) The material shall not contain large clay lumps that do not break up under the action of the compaction equipment; and
- (a) The liquid limit of the material shall not exceed 40, neither shall the PI exceed 18.

(b) The minimum compaction shall be 93% of modified AASHTO maximum density."

**PSD 3.3      SELECTION**

**PSD 3.3.1      General**

Replace the second paragraph with the following:

"The Contractor shall deal selectively with materials from all excavations to ensure that no acceptable backfill or bedding material is contaminated by material unfit for use. No additional payment shall be made in this regard and all costs related to the above selection process shall be included in the applicable payment items. Should useful material be contaminated to such an extent that it is regarded as unfit for use the Contractor shall at his own cost dispose of this material and replace it with material of an equivalent standard to the acceptable in situ material."

**PSD 3.3.2      Backfilling and embankments**

With reference to the last line of this subclause the material to be used for backfill shall be either 15MPa/19 concrete or material complying with 3.2.2 compacted in 150mm layers to 90% of modified AASHTO maximum density, as ordered on site.

**"PSD 3.3.3\*      Selection in Excavations and Borrow Pits**

Approval of a borrow area for a certain purpose does not necessarily mean that all the material in that area is suitable for the specified purpose. It does mean that the borrow area contains some suitable material. The onus shall rest on the Contractor to ensure that only material that is indeed suitable is removed and used for the specified purpose.

When the Contractor has to select excavated material for a specific purpose, the above provisions relating to borrow areas shall apply *mutatis mutandis* to excavations.

The Contractor shall not waste or contaminate material that has been selected for a specific purpose."

**PSD 4      PLANT**

**PSD 4.4      DETECTORS**

Replace the contents of Clause 4.4 with the following:

"The Contractor shall, for the purposes of detecting and locating underground services in accordance with the provisions of Subclause 5.4 of SABS 1200 A and Subclause 5.1.2 of SABS 1200 D, at its own cost, provide and use detecting equipment which is suitable for the detection of underground cables and pipes."

**PSD 5 CONSTRUCTION**

**PSD 5.1 PRECAUTIONS**

**PSD 5.1.1 Safety**

**PSD 5.1.1.1 Barricading and lighting**

Replace "Machinery and Occupational Safety Act, 1983 (Act 6 of 1983)" with "Occupational Health and Safety Act, 1993 (Act 85 of 1993) and Construction Regulations 2014".

**PSD 5.1.1.2 Safeguarding of excavations**

Replace "Machinery and Occupational Safety Act" with "Occupational Health and Safety Act, 1993 (Act 85 of 1993) and Construction Regulations 2014".

Add the following to paragraph (b) (1):

"Payment for supporting the sides of excavations and trenches shall be deemed to be included in the rates tendered for excavations. No separate payment will be made in this regard and it will be the Contractor's responsibility to ensure the safety and stability of all excavations.

Where trenches have to be widened to accommodate manholes, junction boxes, etc., the cost of supporting the vertical sides of such additional excavations will be deemed to be included in the rates tendered for excavation."

Add the following to paragraph (b) (2):

"The slope of the sides of an excavation or trench may never be steeper than 60° to the horizontal and all costs incurred to slope the sides of an excavation or trench will, irrespective of the angle of the slope, be deemed to be included in the rates quoted for excavation."

**PSD 5.1.1.3 Explosives**

Replace the contents of this subclause with the following:

"No overbreak allowance shall apply to this Contract.

The Contractor will generally be permitted to use explosives for breaking up hard material during excavations, for demolishing existing structures, and for other purposes where explosives are normally required, subject to the following conditions:

- (a) The Engineer may prohibit the use of explosives in cases where, in his opinion, the risk of injury to persons or damage to property or to adjoining structures is too high. Such action by the Engineer does not entitle the Contractor to additional payment for having to resort to less economical methods of construction.
- (b) The Engineer's prior written approval shall be obtained for each and every blasting operation. This approval may be withheld if the Contractor does not use explosives responsibly and carefully.



- (c) The Contractor shall comply fully with the requirements of the Explosives Act, Act 83 of 1997 and all other legislation and regulations as may be applicable to blasting and the use of explosives.
- (d) Before blasting is undertaken, the Contractor shall satisfy the Engineer that he has established whether or not the insurers concerned require pre- and post-blasting inspections of buildings and structures within a certain radius of the proposed blasting.

Should such inspections be required, the Contractor shall, together with the Engineer and the insurer, examine and measure the buildings, houses or structures in the vicinity of the proposed blasting site and establish and record, together with the owner, lessee or occupier, the extent of any existing cracking or damage before the commencement of blasting operations.

- (e) When there is a possibility of damage to power and telephone lines or any other services or property, the Contractor shall adapt his method of blasting and the size of the charges and shall use adequate protective measures (e.g. cover-blasting, to reduce the risk of damage.
- (f) All accidents, injury to persons and animals and damage to property shall be reported to the Engineer in detail and in writing as soon as is practicable.
- (g) The Engineer shall be given 24 hours' notice by the Contractor before each blasting operation is carried out.
- (h) When blasting to specified profiles, the Contractor shall so arrange the holes and charges that the resulting exposed surfaces are as sound as the nature of the material permits. The Contractor shall make good, at its own expense, any additional excavation necessitated by the shattering of rock in excess of any overbreak allowances specified in the Scope of Works or given on any drawing.

Notwithstanding the Contractor's compliance with the above provisions, the Contractor shall remain liable for any injury to persons and animals and loss of or damage to property occurring as a result of blasting operations."

#### **PSD 5.1.2     Existing services**

##### **PSD 5.1.2.2     Detection, location and exposure**

Replace the contents of Clause 5.1.2.2 with the following:

"The exposure by the Contractor of underground services, as required in terms of Clause 5.4 of SABS 1200 A and PSA 5.4 shall be carried out by careful hand excavation at such positions and to such dimensions as are agreed to by the Engineer.

Unless otherwise instructed or agreed by the Engineer, no service shall be left exposed after its exact position has been determined and all excavations carried out for the purposes of exposing underground services shall be promptly backfilled and compacted to the following densities:

(a) In roadways: 95% Mod AASHTO density; and

(b) In all other areas: 93% Mod AASHTO density.

Where hand excavations to expose underground services have to be carried out in roadways, the Contractor shall reinstate the road layerworks in accordance with the provisions of the Contract or as directed.

Payment in respect of the exposing of the services by means of hand excavation as described above shall be deemed to be covered by the rates tendered under items PSA 8.8.4(c)."

Payment in respect of the reinstatement of layerworks in road ways will be made in accordance with PSDB 8.3.6.1 and subclause 8.3.6.1 of SABS 1200 DB."

#### **PSD 5.1.2.3 Protection of cables**

Replace Clause 5.1.2.3 with the following:

##### **"5.1.2.3 Protection during Construction**

Further to the requirements of PSA 5.4.2 and Subclause 5.4.2 of SABS 1200 A, major excavating equipment and other Plant shall not be operated dangerously close to Known Services. Where necessary, excavation in close proximity to Known Services shall be carefully carried out with suitable hand tools, excluding picks wherever their use could damage the services. **No additional payment will apply to such more difficult work.**

Should any service not being a Known Service be discovered or encountered during the course of the Contract, the Contractor shall, in addition to complying with the requirements of Sub-clause 5.4.2 of SABS 1200 A (as amended), immediately notify the Engineer thereof and implement such measures as will prevent damage of such service or, if it was damaged in the course of discovery, will prevent and minimise the occurrence of any further damage occurring."

#### **PSD 5.1.2.4 Negligence**

The Contractor shall not repair any service damaged. Where the damage is the result of the Contractor's negligence he shall bear all costs of the repairs undertaken by the owner, as well as the costs of associated damages."

#### **PSD 5.1.6 Road traffic control**

Delete the contents of Clause 5.1.6 and replace with the following:

"The provisions of PSA 5.10 shall apply as applicable. Where the work affects the operation or safety of public road traffic, vehicular and/or pedestrians in addition, to complying with the requirements of 5.1.1.1, the Contractor shall provide, erect and maintain traffic signs, personnel and equipment that conform to the requirements, layout and guidelines of the "South African Road Traffic Signs Manual", as well as the Site Manual entitled "Safety at Roadworks in Urban Areas" as published by the Department of Transport, in number and in layout, as shown in these manuals.

Where necessary and as shown in these manuals, warning lights, an adequate number of flagmen and appropriate barricades, clearly visible to oncoming traffic at all times of the day and night shall be provided. If steel drums are used for this purpose, they shall be ballasted with soil, sand or stones and the outside shall be whitewashed and

provided with retro-reflective material (in the case of tape, of minimum width 10 mm), red on the left-hand side facing oncoming traffic and white on the right-hand side. The drums shall be maintained in a clean and effective condition and no stones shall be placed on them.

No direct payment will be made for the cost of providing and complying to the aforementioned. Payment will be deemed to be covered by the rates and sums tendered and paid for the various items of work included under the Contract."

## **PSD 5.2 METHODS AND PROCEDURES**

### **PSD 5.2.1 Site preparation**

#### **PSD 5.2.1.2 Conservation of topsoil**

Add the following:

"Topsoil ordered to be stripped and conserved for later use shall be stockpiled in a manageable heap where designated by the Engineer. The material together with such vegetation and small roots as may occur within the specified depth shall be stripped, loaded, transported to stockpile within a free haul distance of 0,5 km, maintained and wetted (dust control) for the full duration of the Contract or until use."

#### **PSD 5.2.2 Excavation**

##### **PSD 5.2.2.1 Excavation for General Earthworks and for Structures**

Add the following to paragraph (b):

"When the nature of the material precludes the above procedure, additional excavations shall be carried out to provide working space for the erection of formwork. In general, payment will be made for excavating a working width of 600 mm, but the Contractor may excavate a greater working width at no additional cost to the Employer."

Replace the first sentence of paragraph (e) with the following:

"Where excavations have been carried below the authorised levels, the Contractor shall backfill such excavations to the correct level with approved gravel material compacted to 98% of modified AASHTO density or to the density of the surrounding material, whichever is the higher density.

Where excavations for structures have been carried out in hard material, the Engineer may direct that over-excavation be backfilled with weak concrete if there is a danger of settlement or differential settlement of the foundations.

Where the sides of excavations against which concrete is to be cast have been over-excavated or have collapsed partially, the Contractor shall re-trim the excavations if necessary and, unless other remedial measures are agreed to by the Engineer, shall cast the concrete for the structure, including the additional concrete that may be required as a result of the over-excavation or partial collapse. The cost of the additional concrete or remedial measures shall be for the Contractor's account."

##### **PSD 5.2.2.3 Disposal**

Replace the second sentence with the following:

"The Contractor shall provide necessary spoil sites for the spoiling of all surplus and unsuitable materials and shall make the necessary arrangements with the owner of the site where the material is disposed of and pay all charges and levies as may be applicable for the use of such spoil sites.

Every spoil site provided by the Contractor shall be approved by the local authority in whose area it is located and the spoiling shall comply with the applicable statutory and municipal regulations as well as the requirements of the owner of the spoil site.

No direct payment will be made for locating and making arrangements for suitable spoil sites and for the spoiling and haul of material at and to such sites. Payment will be deemed to be covered by the various rates tendered and paid."

#### **PSD 5.2.2.4\* Selection and Stockpiling**

Approval or designation of the material in a particular borrow pit or excavation for a particular purpose does not imply that all the material in the borrow pit or excavation is suitable for the particular purpose for which the said approval or designation relates, nor that all material in the borrow pit or excavation should be used for the particular purpose. The Contractor shall select suitable material from that borrow pit or excavation, discard unsuitable material and reserve material for other purposes as necessary.

The Contractor shall organise and carry out its operations in such a manner as will prevent the contamination of suitable embankment, fill and backfill material with unsuitable materials. Any excavated material which becomes, in the Engineer's opinion, unsuitable for use in embankments, fills or backfill as a result of contamination, shall be disposed of in a manner acceptable to the Engineer and shall be replaced by the Contractor with materials acceptable to the Engineer, all at the Contractor's cost.

When required, or when ordered by the Engineer, material shall be temporary stockpiled at sites indicated by the Engineer for later use. The additional costs of stockpiling material shall be paid to the Contractor in accordance with the provisions of Sub-clause PSD 8.3.14.

#### **PSD 5.2.3 Placing and Compaction**

##### **PSD 5.2.3.1 Embankments**

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

"Each layer shall be compacted at OMC to a density as specified and in the case of cohesive soil and 100% of modified AASHTO maximum density in the case of non-cohesive soil."

PSD 5.2.3.3\* The material of each area of fill shall, unless otherwise approved, be

deposited in layers of thickness, before compaction, not exceeding 150 mm. The material shall be spread to form a layer that is approximately uniform thickness, and graded over the whole area of the fill site.

Each layer shall be compacted at OMC to a density of at least 93% of modified AASHTO density in the case of cohesive soil or 100% in the case of non-cohesive soil. Should the

material be too wet, owing to rain or any other cause, it shall be harrowed and allowed to dry out to the correct moisture content before compaction is undertaken.

The contractor shall ensure that stormwater will at all times be discharged uniformly over the full fill area or through specially prepared and protected drainage ditches to prevent scouring of the slopes."

#### **"PSD 5.2.3.4 Backfilling over-excavation and overbreak**

The material to be used shall comply with 3.2.1, except that the maximum particle size shall not exceed  $\frac{2}{3}$  of the thickness of the layer being placed, and shall be compacted to at least 90% of modified AASHTO maximum density.

#### **PSD 5.2.4.3 Grass and other vegetation**

Add the following:

"Grass sods shall be fine kweek (Cynodon Dactylon) as specified by the Engineer.

The grass sods shall be nursery grown, cut, delivered and laid within 36 hours from harvesting. It shall be free of weeds and disease and contain a minimum soil thickness of at least 30 mm.

The area to be harvested shall be well watered prior to harvesting and handled with extreme care to retain the maximum amount of moisture and soil within the roots. The contractor shall place and plant the sods on the areas indicated by the Engineer. Prior to the placement, the area to receive sods shall be fertilized by applying 40g/m<sup>2</sup> of super phosphate fertiliser and thereafter be well watered.

Sods shall be fitted closely together and any hollows shall be filled with topsoil to produce an even and smooth surface. During and directly after the laying the sods, the sods shall be well watered and rolled to obtain a level and even surface."

#### **PSD 5.2.5 Transport for Earthworks**

Replace the entire contents of Sub-clause 5.2.5 with the following:

"The transport and haul of all materials, as well as material imported from commercial sources or borrow pits selected by the Contractor, irrespective of the distance and source, shall be deemed to be freehaul, the cost of which shall be included in the Contractor's tendered rates and prices for the excavation of the materials.

No separate compensation shall apply for the transportation of excavated materials."

### **PSD 6 TOLERANCES**

#### **PSD 6.1 POSITIONS, DIMENSIONS, LEVELS, ETC.**

Add the following:

**“PSD 6.1(c) Bulk earthworks**

The tolerances applicable to excavations for structural foundations (degree of accuracy II), as specified in Subclause 6.1(a) shall apply, provided no ponding areas or adverse grades result.”

## PSD 7 TESTING

## PSD 7.2 TAKING AND TESTING OF SAMPLES

Replace the contents of this subclause with the following:

"The Contractor shall arrange with the approved independent laboratory engaged by the Contractor in terms of clause C3.4.9 of the Scope of Works, to carry out sufficient tests on a regular basis as agreed between it and the Engineer to determine whether the degree of compaction, and, where applicable, the quality of materials used, comply with the Specifications and shall submit the results of these tests to the Engineer in a form approved by him.

The compaction requirements for fills shall be deemed complied with when at least 75% of the dry-density tests on any lot show values equal to or above the specified density and when no single value is more than five percentage points below the specified value."

## PSD 8 MEASUREMENT AND PAYMENT

## PSD 8.3 SCHEDULED ITEMS

### **PSD 8.3.1     Site Preparation**

Replace Clauses 8.3.1.1 and 8.3.1.2 with the following:

"Where Site preparation such as clearing, grubbing, the removal of large trees or the removal and stockpiling of topsoil or surface obstructions are required, the provisions and scheduled items of SABS 1200 C shall apply."

### PSD 8.3.2 Bulk Excavation

Replace the contents of subclause 8.3.2 with the following:

**“PSD 8.3.2.1 Excavate in all materials and use for embankment fills, platforms, berms, backfill  
or dispose, as ordered**

Unit:  $\text{m}^3$ 

The unit of measurement shall be the cubic metre measured in place in accordance with Subclause 8.2 of SABS 1200 D.

Separate items will be scheduled for each type of excavation or structure and for each type or manner of disposal of excavated material.

The tendered rates shall cover the cost of excavation in all material, complying with all the precautions required in terms of Subclause 5.1 of SABS 1200 D (as amended) in addition to the cost of excavation, for basic selection and keeping selected material separate, for loading, transporting within the applicable freehaul distance, off-loading at the spoil or stockpile site, maintaining and finishing the spoil site, spreading, backfilling,

watering, compacting as specified on the Drawings, final grading, shaping and trimming, for complying with the requirements for tolerances, providing for testing, finishing and tidying, all in accordance with the specifications.

The rate shall further also provide for backfilling any over-excavation or overbreak in accordance with the requirements of PSD 5.2.3.3.”

**PSD 8.3.2.2    Extra-over Items PSD 8.3.2.1 for:**

- (a) Hard rock excavation ..... Unit : m<sup>3</sup>
- (b) Boulder excavation, Class A ..... Unit : m<sup>3</sup>
- (c) Boulder excavation, Class B ..... Unit : m<sup>3</sup>

The rate shall cover the additional cost of the operations enumerated in Subclauses 8.3.2.1 above for any portion of the excavation that is classified as hard rock, boulder excavation class A or boulder excavation class B as applicable.

**NOTE:**

The rates tendered for Subclauses 8.3.2.1 and 8.3.2.2 above shall also provide for backfilling any over-excavation or overbreak in accordance with the requirements of PSD 5.2.3.3.”

**PSD 8.3.3    Restricted excavation**

Replace the heading of subclause 8.3.3 (a) and the contents of the first two paragraphs with the following:

“PSD 8.3.3(a) Excavate for restricted foundations, footings, aprons, beams, landscaping, structures, pathways, bollards, streetlights as well as for walls and drains, in all materials, and use for fill, backfill, berm or dispose, as ordered ..... Unit: m<sup>3</sup>

Separate items will be scheduled for each category of excavation and for each class or manner of disposal of excavated material.

All restricted excavation shall be measured by volume.

Replace “in 5.2.2.1 – 5.2.2.3 (inclusive)” at the end of subclause (a) with “in Clauses 5.2.2.1 to 5.2.2.4 (inclusive).”

Delete Clause 8.3.3(b) (1) as well as any reference to intermediate excavation in subclause (b). For the purposes of measurement and payment, excavation other than hard rock and boulder excavation will not be separately classified (refer PSD 3.1.2).”

**PSD 8.3.6    Overhaul**

Delete Sub-clause 8.3.6.

No overhaul will be paid on material for the purposes of this Contract and all costs for transporting material shall be included in the applicable tendered rates and amounts.

**PSD 8.3.12    Road traffic signs and markings**

Delete the contents of this Sub-Clause.

The provisions of PSA 5.10 shall apply.





**“PSD 8.3.14\* Extra over items 8.3.2.1 and PSD 8.3.3 for temporary stockpiling ..... Unit: m<sup>3</sup>**

The unit of measurement shall be the cubic metre of material from necessary excavations, temporarily stockpiled by the Contractor on the instructions of the Engineer, before being used in embankments, fills or backfill.

Measurements shall be taken in place in compacted embankment, fills or backfill as the case may be.

The tendered rate shall include for the costs, additional to those provided for in PSD 8.3.2.1 and PSD 8.3.3 of off-loading, forming and maintaining the stockpile for as long as is required, reloading and transporting regardless of the distance involved from the stockpile.

Payments to the Contractor under this item will only be made in respect of that material stockpiled on the instructions of the Engineer (which instruction shall state specifically that payments for such stockpiling will be paid for under this item) and no payments will be made to the Contractor under this item in respect of materials stockpiled by the Contractor on its own volition, nor for materials necessarily stockpiled by the Contractor in consequence of the sequence of operations adopted by it in the course of executing the Works, whether such stockpiling was avoidable or otherwise.”

**“PSD 8.3.15\* Trees and individual plants complete as detailed ..... Unit: No**

Trees / plant installation type stated. (Refer details in schedule)

The rate tendered shall cover all costs to procure, collect, plant/install, construct and execute the following:

- The collection of the trees / plants from the nursery / supplier .
- The excavation of a 1 m<sup>3</sup> hole to accommodate the tree and required soil.
- The excavation of the plants bed to accommodate the plant and the required soil.
- Planting of the trees / plants and backfilling the remainder of the hole using a soil mix consisting of 40 % red soil, 50 % black soil and 10% mushroom compost. Each tree shall receive 500 grams super phosphate mixed into above-mentioned soil mix.
- The provision and installation of the tree support and guard as detailed on the drawings.
- The provision and installation of the specified tree grid and frame complete with all incidentals necessary, as detailed on the drawings.
- The tree shall be secured to the tree support with 3 x 500 mm x 30 mm rubber bands.
- The addition of 2 x 100 grams “AGRIFORM” tablets for each tree.
- Directly after planting, each tree shall receive 50 litres of water twice a week.
- Directly after the commencement of the Defects Liability Period, each tree shall be watered and maintained for a period of 6 months.
- Each tree shall receive at least 60 litres of water once a week and all unwanted weeds shall be removed from the soil base around the tree.
- Pruning required: None.

The tendered rate shall include for all fixings shown and detailed on the drawings.

Payment for this item will be as follows :

60% of the rate will be paid once the tree / plants have been delivered and planted to the satisfaction of the Landscaper.

A further 20% will be paid 3 months after initial planting based on the growth and health of the trees and plants as determined by the Landscaper.

The balance will be paid at the release of the retention period (12 months after the certificate of completion has been issued) if the trees and plants have been fully established as determined by the Landscaper.

Note: The Contractor's attention is drawn to Clause C3.4.5.1 under Part 3: Scope of Work.

**PSD 8.3.16\* Install root barrier geotextile.....Unit : m<sup>2</sup>**

The rates tendered shall cover the cost of supplying and installing a suitable root guard geotextile barrier to protect existing services adjacent to trees planted under PSD 8.1.15.

The geotextile shall comply with the following specifications:

- 17.5% : Active Chemical\*: Trifluralin (a,a,a-Trifluro 2,6 - dinitro - N,N, - Dipropyl - p - toluidine)
- 82.5% : Inert Ingredients: 100% Spunbonded Polypropylene, Polyethylene and Carbon"

**PSDA EARTHWORKS (SMALL WORKS)**

**PSDA 3 MATERIALS**

**PSDA 3.1 Classification For Excavation Purposes**

Delete SABS 1200 D Clause 3.1 and replace with the following:

**PSDA 3.1.1 Method of Classifying**

The Contractor may use any method he chooses to excavate any class of material but his chosen method of excavation shall not determine the classification of the excavation. The Engineer or his Representative will decide on the classification of materials. In the first instance classification will be based on inspection of the material to be excavated and on the criteria given in PSD 3.1.2(a) and (b).

**PSDA 3.1.2 Classes of Excavation**

All materials encountered in any excavation for any purpose including restricted excavation will be classified as follows:

(a) Hard rock excavation

Hard rock excavation shall be excavation in material (including undecomposed boulders exceeding 0.17 cubic metres in individual volume) that cannot be efficiently removed without blasting, wedging and splitting, or hydraulic hammers.

This classification includes materials such as:

- *solid unfractured rock occurring in bulk*
- solid ledges thicker than 200mm
- igneous rock intrusions
- cemented sedimentary rocks.

(b) Soft Excavation

Any material which can be removed by bulldozers or backhoes, shall be classified as soft excavation.

Soft excavation shall be material not falling into the category of hard rock excavation.

**PSDA 5 CONSTRUCTION**

**PSDA 5.1. Precautions**

**PSDA 5.1.1.2 Safeguarding of excavations**

Safeguarding of excavations will be the contractors full responsibility.

**PSDA 5.1.1.3 Explosives**

No blasting will be allowed

**PSDA 5.1.2.4 Negligence**

The applicable requirements of subclause 5.4 of SABS 1200A shall apply.

**PSDA 5.1.8 Road traffic control**

Traffic signs, barriers and flagmen will be required and shall be installed / placed as required. The requirements of subclause PSA 5.11\* will also apply.

**PSD 5.2.6.2 Overhaul**

Delete the contents of this clause. For the purpose of this contract, all haul shall be deemed to be free haul, and the contractor is to include the cost of haul / transport in the relevant tendered rates.

**PSDA 8 MEASUREMENT AND PAYMENT**

**PSDA 8.3.3 Restricted excavation**

Replace the heading of subclause 8.3.3(a) and the contents of the first two paragraphs with the following:

**“PSDA 8.3.2(a) Excavate for restricted foundations, footings, trenches, stormwater drains, and landscaping as if in soft material and use for backfill or berm or dispose, as ordered** Unit : m<sup>3</sup>

Separate items will be scheduled for each category of excavation and for each class or manner of disposal of excavated material.

All restricted excavation will be measured by volume.

Delete subclause 8.3.3(b)(1) as well as any reference to intermediate excavation in subclause (b). For the purposes of measurement and payment, excavation other than hard rock excavation (Class A or Class B) will not be separately classified (refer PSD 3.1.2).

**“PSDA 8.3.2 (c)\* Extra over PSDB 8.3.2(a) for hand excavation where ordered ..... Unit : m<sup>3</sup>**

The rate tendered shall cover the additional cost, extra over that provided for under 8.3.2(a), for carrying out trench excavation by hand where ordered by the Engineer.

The volume shall be computed from the dimensions specified, shown on the drawings or ordered by the Engineer.”

**Note:** Normal handwork required to clean and trim the sides and bottoms of mechanically excavated trenches will not qualify for payment in terms of this clause”

**“PSDA 8.3.9\* Excavate and dispose of unsuitable material from sides or bottom of restricted foundations, footings, trenches and stormwater drains where ordered and replace with:**

(a) Selected material complying with subclause 3.2.2 of SABS 1200 ME compacted to 90% of modified AASHTO maximum density

(Source to be stated)..... Unit : m<sup>3</sup>

(c) 15MPa/19 concrete ..... Unit : m<sup>3</sup>

Separate items will be scheduled for each type of excavation, source of backfill material and manner of backfill.

The rates tendered shall cover the cost of excavating the unsuitable material to the extent ordered by the Engineer, disposing of the material as directed within a free haul distance and subsequent backfilling of the excavation using selected material or concrete as ordered.

**NOTE:** The work required to construct the selected layer beneath areas to be concrete lined will be measured for payment under (a) as applicable. The unit of measurement shall be the cubic metre of selected material placed and compacted. Any excavation required to accommodate the concrete lining will be deemed to be covered by subclause 8.3.4 of SABS 1200 DM.”

## **PSDB EARTHWORKS (PIPE TRENCHES)**

### **PSDB 3 MATERIALS**

#### **PSDB 3.1 CLASSES OF EXCAVATION**

Delete the contents of Clause 3.1 and replace with the following:

“The classification shall be as described in PSD 3.1”.

#### **PSDB 3.5 BACKFILL MATERIAL**

Delete the contents of Clause 3.5(b) and replace with the following:

“Materials used for backfilling of trenches beneath or directly within a new roadway, up to underside of the road layers, shall be 37,5 mm basecourse quality material comply with SANS 1200 MF compacted in layers not exceeding 150 mm thick and compacted to 98% of modifies AASHTO maximum dry density.

The area subject to loads from road traffic shall be held to apply for a width of 150mm beyond the back of kerb.

Materials used for backfilling of trenches beneath or directly within existing roadways shall comply with the requirements of PSDB 3.6.1.”

### **PSDB 3.6 MATERIALS FOR REINSTATEMENT OF EXISTING ROADS AND PAVED AREAS**

#### **PSDB 3.6.1 Subbase and base:**

Delete the contents of Clause 3.6.1 and replace with the following:

“Where trenches cross existing surfaced roads the following shall apply:

- a) The service (pipe, cable etc.) shall be laid on a bedding cradle and covered with a fill blanket, as specified in SABS 1200 LB or in the Specification.
- b) The remaining portion of the trench, from the top of the fill blanket to the road surface, shall be filled with cellular trench backfill material.
- c) The specification for this material is as follows:

- (i) Definition : Material shall consist of a cellular light-weight concrete incorporating large volumes of controlled micro-air cement and sand.
- (ii) Density Range : 150 - 1400 kg/m<sup>3</sup> and have an equivalent CBR value greater than 100.
- (iii) Consistency : Material shall be of a pickable nature after final setting.
- (iv) Admixture : The admixture is a pre-foam organic compound accelerated by the addition of calcium chloride. Chloride free additive must be used where the outer casing of the service being covered is metallic.
- (v) Setting Times : The finished product must achieve initial set within 90 minutes. It must then be able to carry light traffic.
- (vi) Specifications : British Standards draft S.W.P. 146 of July 1990.

#### **“PSDB 3.6.4 Bituminous and Premix Surfacing**

Where this project is undertaken simultaneously with the construction of bituminous and/or premix surfaced roads, a hot premix and/or bituminous surfacing in accordance with the specifications applicable to the road surfacing shall be used in the reinstatement of the road surface. Where the construction of surfaced roads do not form part of this project a hot premix (Type IVa or 7 mm sidewalk mix) laid on a cleaned surface which has been previously tack coated with an anionic emulsion shall be used in the reinstatement of the road surface.”

## **PSDB 3.7      SELECTION**

Replace the words “if he so wishes” in the first line of the second paragraph with the words “at his own cost”.

Add the following to subclause 3.7:

“Notwithstanding anything to the contrary stated in this subclause the Contractor shall, where so ordered, selectively stockpile topsoil, material complying with 3.5, as well as road materials for re-use in terms of 5.9.”

## **PSDB 5      CONSTRUCTION**

### **PSDB 5.1.2.2      Special water hazards**

The Contractor shall take note that no special water hazards are designated. The Contractor shall therefore deal with all water as specified in 5.1.2.1, including flow into trenches due to a high or perched water table and any overland flow.

### **PSDB 5.1.3      Accommodation of Traffic and Access to Properties**

Replace the semi-colon and the word “and” at the end of Subclause 5.1.3(a) with a full stop and replace item (b) with the following:

“(b) Where necessary and to achieve compliance with his obligations in terms of the Scope of Work (Clause C3.4.9.5) to provide and maintain pedestrian and vehicular access to properties affected by the Works, the Contractor shall construct and maintain to the satisfaction of the Engineer, such temporary access roads around, and/or steel or timber bridges over excavations in roads, pavements, entrances or accesses to properties.

Temporary pedestrian access bridges shall be at least 1, 2 m wide and temporary access bridges for vehicles shall be at least 3,6 m wide. All temporary access bridges shall be fitted with handrails as well as protective mesh fencing on both sides.

On completion of the work, the Contractor shall dismantle and remove all such temporary constructions and reinstate these areas to their former condition.

No direct payment will be made for the cost of accommodating traffic and providing access to erven and properties. Payment will be deemed to be covered by the various rates tendered and paid.”

### **PSDB 5.1.4      Existing Services that Intersect or Adjoin Trenches**

Add the following:

“All the known existing services are indicated on the drawings and the Contractor shall note that no separate and additional payment will be made or certified for intersecting, crossing, working adjacent and along existing services. The Contractor’s attention is directed to the contents and requirements of C3.4.9.8 under C3.4: Construction of the Scope of Work as well as Clause PSA 5.4 of the Specifications.

Payment shall be deemed to be covered by the various rates and sums tendered and paid for the under the relevant items of work included under the Contract.”

## **PSDB 5.2 MINIMUM BASE WIDTHS**

Notwithstanding the provisions of this Sub-Clause, the minimum base widths for the various trenches shall be as shown on the Drawings.

## **PSDB 5.4 EXCAVATION**

Add the following:

"Except where otherwise specified or shown on the drawings, trenches shall be of such a depth that the minimum cover over the services shall be 700 mm, except at road-crossings, where the minimum cover shall be 1200 mm.

Trench excavations for road crossings shall, except where otherwise specified, be completed and satisfactorily backfilled before the construction of any subbase layer may commence.

The excavation of trenches across a concurrently constructed carriageway shall commence after the subgrade layer has been accepted. The pipe/duct/service shall be laid and the trench backfilled to the acceptable requirements, including density testing before the construction of the next layer may commence.

With respect to the length of trench permitted to be excavated, the Contractor shall take note that unless otherwise agreed by the Engineer, not more than 1000 m of trench shall be excavated in advance of trench backfill.

Further, no trench may be left open over the period 16 December to 8 January inclusive.

Where trenches have to be excavated under this Contract adjacent to live services / other services laid under other contracts, it may be necessary to shore trenches to prevent damage to the live services / other services. It will be the responsibility of the Contractor to ensure that services constructed under other contracts of live services are not damaged by his operations during the Contract."

## **PSDB 5.6 BACKFILL**

### **PSDB 5.6.1 General**

Replace the first sentence with the following:

"Backfilling of service trenches may only commence after the service has been laid, firmly bedded in the specified cradle, the blanket placed and compacted as specified and after the service has been tested in terms of Clause 7 of SABS 1200 L."

### **PSDB 5.6.2 Material for backfilling**

Replace the last paragraph of this Clause "In areas.....backfill" with the following:

"The material for backfilling in areas subject to road traffic loads shall comply with PSDB 3.5."

### **PSDB 5.6.3 Disposal of soft excavation material**

Delete the contents of Clause 5.6.3 and replace with the following:

"Excess and surplus material arising from the excavations will be disposed of and spoiled in accordance with subclause PSD 5.2.2.3.

Where topsoil is encountered this will be set aside on site and re-used later."

**PSDB 5.6.6 Completion of backfilling**

Add the following:

"If in the opinion of the Engineer insufficient progress is being made with the backfilling of trenches, the Engineer will be entitled to order that no further excavation takes place until the backfilling operation has caught up."

**PSDB 5.7 COMPACTION**

**PSDB 5.7.1 Areas not subject to Traffic Loads**

Add the following sentence:

"All non-cohesive material shall be compacted to 100% of modified AASHTO maximum density."

**PSDB 5.7.2 Areas Subject to Traffic Loads:**

Delete "98%" in the last sentence and replace with "100%".

Add the following:

"All service trenches that fall within the road reserves shall be regarded as areas subject to traffic loads."

**"PSDB 5.9.7\* Procedure for Backfilling with Trenchfill**

- a) The cellular backfill material (hereinafter called "trenchfill") shall be ordered from an approved supplier and shall be delivered to site in a truck-mixer. The material shall be poured directly into the trench and no vibrating or additional compaction shall be necessary.
- b) The trenchfill shall be cast flush with the surrounding road surface and trowelled to an even surface.
- c) After the trenchfill has set, either the same day or the following day, the top 40mm of the trenchfill shall be scabbled-off using a pick or paving breaker and the depression filled, reinstated and compacted using hot asphalt. During and after compaction, the asphalt shall be finished flush with the surrounding road surface.
- d) The asphalt reinstatement of the trench shall be carried out by the Contractor.

**"PSDB 5.9.8\* Safety**

During the time period between pouring the trenchfill into the trench, and the setting of this material, it is imperative that no person or animal be allowed to gain access to the trench. Suitable barricades shall be provided around the trench and a guard placed on duty at the trench until the material sets.



Should the trenchfill not be set by nightfall, safety lamps shall be placed on the barricades.

The responsibility for public safety lies with the organisation carrying out the excavation and backfill operations.

## **PSDB 8 MEASUREMENT AND PAYMENT**

### **PSDB 8.1.1 Replace “along the route of the pipeline” in the third line of Clause 8.1.1 with “as specified in PSDB 5.6.3”.**

Replace the contents of subclause 8.2.4 with the following:

"No separate items will be measured for shoring. Refer to Item PSD 5.1.1.2 in this regard."

**“PSDB 8.2.5\*** If payment in terms of PSA 8.8.4 has been made to expose an existing service and the excavation involved falls within a proposed trench, the quantity measured for trench excavation shall be reduced accordingly.”

## **PSDB 8.3 SCHEDULED ITEMS**

### **PSDB 8.3.2 Excavation**

(d) Excavate in all materials for trenches, backfill, compact and dispose of surplus material..... Unit: m or m<sup>3</sup>

Replace the first sentence with the following:

“Items will be provided for various trenches widths as specified and detailed on the Drawings and various depths in increments as specified in the Bill of Quantities.”

Add the following:

“The rate tendered shall also cover the cost of complying with PSDB 3.5, as well as the cost of any disruption or delay in complying with PSDB 5.4 and PSL 5.1.4.

Delete Clause 8.3.2 (b)(1) as well as any reference to intermediate excavation in Clause (b). For the purpose of measurement and payment, excavation other than hard rock excavation will not be separately classified (refer PSDB 3.1).

**“PSDB 8.3.2(d)\* Extra over PSDB 8.3.2(a) for hand excavation where ordered .....Unit: m<sup>3</sup>**

The rate tendered shall cover the additional cost, extra over that provided for under 8.3.2(a), for carrying out trench excavation by hand where ordered by the Engineer. The volume shall be computed from the dimensions specified, shown on the drawings of ordered by the Engineer.”

Note:Normal handwork required to clean and trim the sides and bottoms of mechanically

excavated trenches will not qualify for payment in terms of this clause”

### **PSDB 8.3.3.1 Make up deficiency in backfill material**

Add the following to sub-clause 8.3.3.1:

“(d) Trenchfill..... Unit: m<sup>3</sup>

For item (d) the rate tendered shall cover the cost of the supply and placing of the material as specified including the later removal of the top 40 mm.

Further for item (d) the volume will be computed from the length of trench falling within the area subject to road traffic loads, as applicable, and the width determined from the drawings and specifications, and the depth from road surface to top of selected fill blanket. Payment for this item will be additional to that for excavation covered by 8.3.2. and PSDB 8.3.2.

The rate shall cover the cost of temporary accommodation of traffic (including the signs and by-passes), arranging for safety of the public, excavation (including breaking up, removal and disposal of surplus material) and the subsequent reinstatement as specified in 5.9 and PSDB 5.9, and shall include the cost of delays and the cost of any risk of having to repair damage as specified in 5.10.

#### **PSDB 8.3.3.3 Compaction in road reserves**

Replace the contents of this Clause with the following:

“This item shall only apply to the compaction of materials in areas subject to road traffic loads as defined in PSDB 3.5.

The volume will be computed from the length of trench falling within the defined area, the width as shown on the Drawings and the depth from the top of the bedding to the designated level of the underside of the required selected layer, finished verge level etc. as scheduled on the Drawings. The rate tendered shall cover the cost of the additional compactive effort as specified.

Payment for this work will be additional to that covered by 8.3.2(a).”

#### **PSDB 8.3.3.4 Overhaul**

Replace the contents of this subclause with the following:

“Measurement and payment shall be in accordance with subclause PSD 5.2.5.”

#### **PSDB 8.3.5 Existing Services that Intersect or Adjoin a Pipe Trench**

Delete the entire contents of this Clause.

The provisions of Clause PSA 5.1.4 shall apply.

Payment shall be deemed to be covered by the various rates and sums tendered and paid for the under the relevant items of work included under the Contract.”

#### **PSDB 8.3.6.1 Reinstate road surfaces**

Replace from “a) Gravel on shoulders ....” through to “....Etceteras.....Unit: m<sup>2</sup>” with the following:

“(a) Concrete paving (25/19 MPa) to indicated surfaces, 100 mm thick..... Unit : m<sup>2</sup>

(b) Hot asphalt type IVA (min thickness 40 mm) ..... Unit : m<sup>2</sup>

The area will be computed from the length of paved trench surface as applicable and the width determined from the applicable side allowances specified in 8.2.3.

The rates shall further cover the cost of temporary accommodation of traffic (including the signs and by-passes), arranging for safety of the public, excavation (including breaking up, removal and disposal of surplus material) and the subsequent reinstatement as specified in 5.9, and shall include the cost of delays and the cost of any risk of having to repair damage as specified in 5.10.

The rate tendered shall further cover the cost of the supply and placing of the material as specified on the drawings, documented in the specification and called for by the Engineer to reinstate the affected area to at least its original condition."

**PSDB 8.3.7 Accommodation of Traffic**

Delete Subclause 8.3.7. The provisions of PSA 5.10 shall apply.

**PSDM EARTHWORKS (ROADS, SUBGRADE)**

**PSDM 1 SCOPE**

Add the following:

"This specification shall also cover the construction of the pioneer layer."

**PSDM 2 INTERPRETATIONS**

**PSDM 2.3 DEFINITIONS AND ABBREVIATIONS**

Notwithstanding the definition of roadbed given under Clause 2.2 of SABS 1200 M, all in-situ surfaces requiring compaction as indicated on the drawings, shall be classified as roadbed.

**PSDM 3 MATERIALS**

**PSDM 3.1 CLASSIFICATION FOR EXCAVATION PURPOSES**

Notwithstanding the provisions of this Clause, the excavation of material will, for purposes of measurement and payment, be classified as specified in PSD 3.1.

**PSDM 3.2.2 Fill**

Notwithstanding the requirements of this Clause, material from commercial sources or borrow pits located by the Contractor, to be used in the fill, shall comply with the requirements of Clause 3.2.3 and PSDM 3.2.3.

**PSDM 3.2.3 Selected layer**

Replace the contents of this Clause with the following:

"The following requirements shall apply in respect of the selected layer:

- a) Maximum particle size: 60% of compacted layer thickness
- b) Unstabilised selected layer:

- (i) Upper selected layer

Minimum CBR at 93% of modified AASHTO density: 15

Maximum PI: 12 (the Engineer has the right to alter this requirement to 3 x the grading modulus + 10)

Note:

The requirements for the upper selected layer also apply where only one selected layer is specified.

- (ii) Lower selected layer and Pioneer layer

Minimum CBR at 93% of modified AASHTO density: 7

Maximum PI: 12 (the Engineer has the right to alter this requirement to 3 x the grading modulus + 10)

## **PSDM 5 CONSTRUCTION**

### **PSDM 5.1.2 Accommodation of traffic**

The requirements of Clauses PSA 5.10 and PSD 5.1.6 shall apply regarding the control and temporary accommodation of traffic.

### **PSDM 5.2.2.2 Dimensions of cuts**

Delete "suitable material .....7" in the fifth line and replace with "material complying with 3.2.3 and PSDM 3.2.3."

### **PSDM 5.2.2.3 Use of material**

Add after "borrow pits" in the second line of Sub-clause (a): "or commercial sources."

### **PSDM 5.2.2.5 Disposal of surplus or unsuitable material**

Add after "directed" in the second line of this Clause "(refer PSD 5.2.2.3)".

### **PSDM 5.2.3.2 Removal of unsuitable ground**

Replace the second sentence of paragraph (a) with the following:

"The excavated spaces shall then be backfilled with approved imported material compacted to the required density."

Add the following sentence to paragraph (b):

"Unsuitable excavated material will be paid for as cut to spoil."

### **PSDM 5.2.3.3 Treatment of roadbed**

Add the following to Clause (a):

"The depth of compaction shall be 150mm."

**PSDM 5.2.4.3 Finishing**

Notwithstanding the provisions of this Clause the requirements of PSDM 5.2.9 shall as applicable apply to the finishing off of verges.

**PSDM 5.2.5 Selected layer**

Replace the contents of this Clause with the following:

"Except with regard to density, the requirements of Clause 5.2.4 shall apply. The degree of compaction shall be:

Upper selected / Selected: 93% of modified AASHTO maximum density.

Lower selected

:

93% of modified AASHTO maximum density."

**PSDM 5.2.8. Transport**

Replace the contents of this subclause with the following:

"The provisions of Subclause PSD 5.2.5 of SABS 1200 D, as amended, shall apply."

**"PSDM 5.2.9\* Trimming, shaping and rolling of verges**

During the initial earthworks the verge width shall be cut or filled to approximately the final level and shall be kept trimmed and tidy during construction of the works. Where specifically ordered and after the completion of the road layers, including the surfacing, and after construction of the necessary kerbs, including the satisfactory backfilling behind the kerb, the verge shall be finished off, trimmed, shaped, rolled and compacted, to the lines and levels shown on the drawings or as specified.

The verge material shall consist of that material which would normally be occurring at that position or depth when in cut and shall not be contaminated by foreign materials such as bricks, basecourse material, horticultural inferior materials from trench excavation, etc. Verges in fill conditions are to consist of the material as specified for the fills and similarly not be contaminated with foreign materials.

Over those areas and sections of verge where grass is to be planted or where other cover is specified, the verge shall not receive the treatment (trimmed, shaped and rolled) described above.

The Contractor shall be responsible for taking the necessary precautions and measures to control the dust nuisance which may arise due to his operations on the verge, whether from the natural ground surface or topsoil layer, until the verge is accepted by the Engineer."

**"PSDM 5.2.10\* Dimension and Level Control and Process Control**

The Contractor shall submit to the Engineer records of dimension and level control and/or process control prior to requesting the Engineer to carry out any routine tests and/or inspections.

A sample form can be obtained from the Engineer."

**"PSDM 5.2.11\* Requesting of Tests**

Tests and Inspections of the works will only be carried out by the Engineer once the appropriate test/inspection request forms have been fully completed. Test/inspection request forms can be obtained from the Engineer.

**PSDM 6 TOLERANCES**

**"PSDM 6.5\* DIMENSION AND LEVEL CONTROL**

The requirements of PSM 6.4 shall apply."

**PSDM 7 TESTING**

**PSDM 7.3 ROUTINE INSPECTION AND TESTING**

Replace Table 2 and the contents of Clause 7.3.2 with the following:

"The dry density requirements for a particular lot of selected layer or wearing course shall be deemed to be satisfied if the average density and the results of individual tests meet the requirements specified in Table 2 below. Refer to Clause PSD 7.2 for the requirements for fill.

**TABLE 2 - DENSITIES**

1	2	3	4	5
Layer	Specified density (% of modified AASHTO density)	Number of tests per lot	Average density %	Minimum density for any single test, %
Upper selected	93	3 and 4	93,1	89,4
		5	93,4	89,2
		6	93,6	89,0
Lower selected layer or pioneer layer	93	3 and 4	93,1	89,4
		5	93,4	89,2
		6	93,6	89,0

## **"PSDM 7.4\* INSPECTION AND TESTING BY ENGINEER**

The requirements of PSM 7.3 shall apply."

## **PSDM 8 MEASUREMENT AND PAYMENT**

### **PSDM 8.1 BASIC PRINCIPLES**

Add the following:

"The requirements of PSM 8.2 shall apply. The Contractor shall further make provision in the various rates for the construction of the roadbed, fill and selected layer for the cost of his own process control testing and the cost of complying with PSDM 6.5 and PSDM 7.4."

### **PSDM 8.2 COMPUTATION OF QUANTITIES**

Replace Clauses 8.2.1 to 8.2.3 (inclusive) with the following:

"PSDM 8.2.1 The provisions of Clause 8.2.1 of SABS 1200 D shall apply.

PSDM 8.2.2 The provisions of Clause 8.2.2 of SABS 1200 D shall apply.

PSDM 8.2.3 The provisions of Clause 8.2.2 of SABS 1200 D shall apply."

PSDM 8.2.5 Verifying quantities

Replace the first sentence of this Clause "Before the work ..... quantities" with the following:

"After the works have been set out and the area cleared (including the demolition of buildings and removal of brick and asphalt paving as well as surface obstructions), the Contractor shall allow the Engineer reasonable time to take cross-sections for the purpose of measurement and payment of cut and fill quantities. The latter being subject to the adjustments stipulated in Clause 8.2.2."

### **PSDM 8.3.3 Treatment of roadbed**

Add the following to Clause 8.3.3(a):

"(4) Minimum of 95% of modified AASHTO maximum density Unit : .....m<sup>3</sup>

Add the following paragraph to the end of Clause 8.3.3(a):

"The unit of measurement shall be the cubic metre of material recompacted as specified and the volume shall be determined from levelled cross-sections on which are superimposed the levels to which the roadbed is to be constructed. When material is imported to make up the required volume, such material will be paid for as cut or borrow to fill as relevant.

#### **Note:**

No additional payment will be made for difficult work or hand operations in confined areas."

**PSDM 8.3.4    Cut to fill, borrow to fill**

Replace the contents of this Clause with the following:

"(a) Cut to fill compacted to 90% of modified AASHTO maximum density..... Unit: m<sup>3</sup>

The rate tendered shall cover the cost of excavating from the site as if in soft material, transporting, preparing, processing, shaping, watering, mixing, compacting to percentage of modified AASHTO maximum density specified, trimming and testing the fill.

The rate tendered shall further differentiate between cut to fill in vehicular trafficked areas and cut to fill in pedestrian trafficked areas.

(b) Borrow to fill from commercial or off site sources located by the Contractor compacted to 90% of modified AASHTO maximum density ..... Unit: m<sup>3</sup>

The rate tendered shall cover the cost of acquiring the material from commercial or off site sources located by the Contractor, any excavation and selection required, loading, transporting to the point of use irrespective of distance, temporary stockpiling if necessary, placing, watering, compacting to percentage of modified AASHTO maximum density specified, trimming and testing the fill."

The rate tendered shall further differentiate between borrow to fill in vehicular trafficked areas and borrow to fill in pedestrian trafficked areas.

**Note:**

Cut or borrow to fill in pedestrian trafficked areas shall only qualify for payment if the fill is placed after the kerbs have been laid, alternatively it will be paid as cut or borrow to fill in vehicular trafficked areas.

No additional payment will be made for difficult work or hand operations in confined areas.

**PSDM 8.3.5    Selected layer compacted to 93% of modified AASHTO maximum density**

Replace the contents of this Clause with the following:

"(a) Using material cut from the Site..... Unit : m<sup>3</sup>

The rate tendered shall cover the cost of excavating as if in soft material, selecting, loading, transporting, placing, watering, compacting to percentage of modified AASHTO maximum density specified, trimming and testing the selected layer.

(b) Using material from commercial or off site sources located by the Contractor .Unit: m<sup>3</sup>

The rate tendered shall cover the cost of acquiring the material from commercial or off site sources located by the Contractor, any excavation and selection required, loading, transporting to the point of use irrespective of distance, temporary stockpiling if necessary, placing, watering, compacting to percentage of modified AASHTO maximum density specified, trimming and testing the selected layer.



Note :

No additional payment will be made for difficult work or hand operations in confined areas.”

**PSDM 8.3.7    Cut to spoil or stockpile from**

Delete paragraph (b). In terms of PSDM 3.1 intermediate excavation will not be separately measured for payment.

Add the following:

"Separate items will be scheduled for cut to spoil and cut to stockpile. The rate tendered shall further cover the cost of complying with the requirements of Clause 5.2.3.2 irrespective of the depth or extent of the material ordered to be removed, or whether the order to remove unsuitable material is given after the completion of any initial cut operation.

The tendered rate shall further, in the case of cut to spoil, include full compensation for transporting the material regardless of the distance involved and for all other incidental cost to dispose of the spoil material. (Refer also PSD 5.2.2.3, PSD 5.2.5 and PSDM 8.3.12)."

**PSDM 8.3.9    Overbreak of excavation in:**

Delete sub-item (a). In terms of PSDM 3.1 intermediate excavation will not be separately measured for payment.

**PSDM 8.3.11    Extra over 8.3.2, 8.3.4 or 8.3.5 for temporary stockpiling of material**

Add the following:

The temporary stockpiling of material from commercial sources or borrow pits located by the Contractor will not be measured for payment."

**PSDM 8.3.12    Overhaul**

Delete this item as no overhaul will be paid on material for the purposes of this contract and all the costs for transporting material shall be included in the applicable tendered rates and amounts.

**PSDM 8.3.13    Surface finishes**

Replace the contents with the following:

“a) Topsoiling from on-site sources ..... Unit: m<sup>2</sup>

The rate shall cover the cost of excavating from stockpiles formed in terms of 5.2.1 and hauling and spreading in terms of subclause 5.2.4.2 of SANS 1200 D or subclause 5.2.5.2 of SANS 1200 DA, as applicable.

b) Topsoiling from commercial sources..... Unit: m<sup>2</sup>

The rate shall cover the cost of acquiring and hauling, regardless of distance, the required topsoil material mix complete with fertiliser as specified and for spreading in terms of subclause 5.2.4.2 of SANS 1200 D or subclause 5.2.5.2 of SANS 1200 DA, as applicable.

c) Grassing or other cover ..... Unit: m<sup>2</sup>

Separate items shall be scheduled for the various covers specified.

The rate shall cover the cost of acquiring and hauling, regardless of distance, the required grassing or cover specified, for applying, placing, fertilizing, constructing, watering and rolling the specified cover all in terms of subclause 5.2.4.3 of SANS 1200 D or subclause 5.2.5.3 of SANS 1200 DA, as applicable.

Grassing and other vegetation specified shall be obtained from a reputable source.

Note: This item is not applicable to quantities measured under 8.3.2(b).

d) Trim, shape and roll verge, where ordered ..... Unit: m<sup>2</sup>

Measurement shall be the surface area of the verge prepared in accordance with the requirements of PSDM 5.2.9. The rate tendered shall cover the cost of all things necessary to finish off the verge as specified, including the incorporation of material to make up for material lost due to weather or other reasons. (Cut and fill to bring verge to level payment under 8.3.4).

Add the following subclauses

**PSDM 8.3.17\* Rectifying faulty subgrade ..... Unit : m<sup>3</sup>**

Payment will only be made for areas within the road bed that are not greater than 100m<sup>2</sup> in extent and is deemed unsuitable ground in terms of Clause 5.2.3.2 as ordered by the Engineer. Payment for the removal, disposal, etc will be paid under cut to spoil or stockpile from as applicable.

The rate shall cover the cost of acquiring selected material (in terms of PSDM 3.2.3) from commercial sources or borrow pits located by the Contractor, transporting, temporary stockpiling, (if required) placing the selected material, watering, compacting to 95% Mod AASHTO maximum density, trimming, grading and testing

Areas that are greater than 100m<sup>2</sup> in extent will be paid under excavation items as applicable.”

**“PSDM 8.3.18\* Construct the selected layers with material from commercial sources Unit: m<sup>3</sup>**

The rate shall cover the cost of locating the source, complying with all the relevant precautions required in terms of Clause 5.1, SABS 1200 D, procuring the material, basic selection, transporting from source to point of deposition on the road, spreading, watering, compacting, final grading, complying with the tolerances and testing.”

**PSGA CONCRETE (SMALL WORKS)**

**PSGA 1 SCOPE**

Add the following:

"This specification shall also cover the construction of the concrete walkways, traffic circles and concrete slabs."

**PSGA 3 MATERIALS**

**PSGA 3.2 CEMENT**

**PSGA 3.2.1 Applicable Specifications**

Replace the contents of this subclause with the following:

"Notwithstanding the contents of this Clause, where reference is made in this specification or the standard specifications to any cement specification, it shall be replaced with the following specification, SABS EN 197-1-Cement-Part 1: Composition, specifications and conformity criteria for common cements.

On this Contract cement grade CEM I 42, 5 shall be used."

**PSGA 3.2.2 Storage of cement**

Add the following:

"Cement shall not be stored for longer than 12 weeks without the Engineer's permission."

**"PSGA 3.8\* Curing compound**

Curing compound shall be white pigmented natural resin based liquid curing compound complying with ASTM 309-74."

**"PSGA 3.9\* STAINLESS STEEL**

The following grades of stainless steel shall be used:

- 316L for welded applications,
- 316 for not-welded applications."

**"PSGA 3.10\* MATERIALS FOR BUILDING WORK**

**PSGA 3.10.1 Cement**

The requirements stipulated for subclause 3.2.1 and PSGA 3.2.1 shall apply.

**PSGA 3.10.2 Sand**

Sand for mortar shall comply with SABS 1090.

### **PSGA 3.10.3 Bricks**

Brickwork shall be built in stretcher bond. The walls shall be built to the dimensions shown on the Drawings or ordered. All bricks shall be well soaked in water immediately before being laid and the previous course of bricks shall be well wetted before the laying of the following course.

Walls shall be carried up regularly so that no brickwork is more than 1m higher than adjoining brickwork.

All bricks shall comply with SABS 227 and shall be NFX burnt clay masonry units free of stones, cracks and other defects. The bricks shall be obtained from an approved manufacturer and samples of the bricks shall be submitted to the Engineer for approval.

### **PSG 3.10.4 Mortar**

Mortar shall comprise of the cement, lime and sand mixed in the proportions given below:

Cement: 50 kg

Lime: 0 – 40L

Sand: 130L (measured loose and damp)”

## **PSGA 4 PLANT**

### **"PSG 4.4.2 Finish**

The finish to all exposed concrete shall be smooth and that to buried or backfilled surfaces, rough.

## **PSGA 5 CONSTRUCTION**

### **PSGA 5.4 CONCRETE**

#### **PSGA 5.4.1.5 Strength Concrete**

Add the following:

"The Contractor shall when requesting approval of a mix design, submit the constituent proportions of the proposed mix together with the results of compressive strength tests carried out."

#### **PSGA 5.4.2 Batching**

Notwithstanding the requirements of this Clause, the method of batching shall be subject to approval.

**PSGA 5.4.7    Curing and protection**

Notwithstanding the provisions of this subclause, all cast in situ concrete shall, except where otherwise authorised, be cured in accordance with the requirements of subclause (c) using curing compound of the type specified in PSGA 3.8.

**PSGA 5.4.8    Concrete surfaces**

All unformed concrete surfaces shall, except where otherwise ordered, be given a wood float finish.

**“PSGA 5.5\*    CONSTRUCTION OF CONCRETE SURFACING**

The surfaces on which concrete are to be cast shall, after being trimmed and compacted, be covered with a sprayed bitumen emulsion primer or polyethylene sheeting of nominal thickness 0, 25 mm, all joints in the sheeting being overlapped at least 150mm. Care shall be taken not to damage the bitumen layer or the polyethylene sheeting (as relevant) during the placing of reinforcement and during concreting.

Joints in concrete shall be sealed and shall be constructed as shown on the drawings. The paving shall be cast in alternate panels and, after the concrete in the alternate panels has set, the exposed end surfaces shall be painted with bituminous emulsion before the intermediate slabs are cast.

The exposed surfaces of the concrete shall be given a broom textured finish and shall be cured as specified in 5.4.7 and PSGA 5.4.7.”

**“PSGA 5.6\*    BRICKWORK**

Brickwork shall be built in stretcher bond, except for the top course of the walls which shall be built in soldier course. The walls shall be built to the dimensions shown on the drawings or ordered. All bricks shall be well soaked in water immediately before being laid and the previous course of bricks shall be well wetted before the laying of the following course.

Walls shall be carried up regularly so that no brickwork is more than 1m higher than adjoining brickwork.

Mortar joints shall not exceed 10 mm in thickness and shall be pointed. The mortar used shall be mixed in small quantities and used within 2 hours of mixing. Bricks shall further be clay fire bricks to SABS 227.”

**PSGA 6        TOLERANCES**

**PSGA 6.4      PERMISSIBLE DEVIATIONS**

Add the following:

"Notwithstanding the tolerances specified for the construction of the embankment, the following tolerances shall apply to the construction of the apron slab:

Position in : Within 100mm of its designated position, provided that over  
plan any length of 30m, the deviation from a straight line joining  
the extremities of the 30m section, shall not exceed 25mm.

Thickness : Not less than 95mm.

Width :  $\pm 25\text{mm}$  provided the requirements with respect to alignment  
are met.

Level :  $\pm 10\text{mm}$  provided the requirement with respect to thickness  
is met and that the distance between the surface and a 3m  
straight edge placed on the apron slab is nowhere more than  
5mm.

## **PSGA 7 TESTS**

### **PSGA 7.1.2 Frequency of sampling**

Notwithstanding the requirements of this subclause, the Contractor shall take note that he is responsible for taking an adequate number of tests to ensure that the concrete being used complies with the specification. The Engineer will only carry out such control testing as he may require.

## **PSGA 8 MEASUREMENT AND PAYMENT**

### **PSGA 8.1.2 Reinforcement**

Replace the contents of this clause with the following:

"The unit of measurement for steel bars shall be the ton of reinforcement in place in accordance with the drawings or as authorised by the Engineer.

The unit of measurement for welded steel fabric shall be the square metre of fabric reinforcement in place and the quantity shall be calculated from the nett area covered by the mesh, excluding laps.

Clips, ties, separators, stools and other steel used for positioning reinforcement shall not be measured unless shown on the bending schedules.

The rate tendered shall cover the cost of the supply, delivery, cutting, bending, placing and fixing of the steel reinforcement, including all tying wire, stools, supports and waste."

### **PSGA 8.1.3 Concrete**

Delete all references to "intermediate excavation" throughout this subclause.

Notwithstanding the provisions of subclause 8.1.3.1 (b) and (d) concrete required to replace overbreak or over-excavation will not be measured for payment (refer PSD 3.2.2, PSD 5.1.1.3 and PSD 5.2.2.1).

Add after “testing” in the second line of subclause 8.1.3.3(a) “including transport to an approved laboratory.”

#### **PSGA 8.4.4 Unformed surface finishes**

Add the following :

“(c) ..... Broom textured finish Unit : m<sup>2</sup>”

#### **“PSGA 8.4.5\* Concrete surfaces (Surface area to be paved, thickness and grade of concrete specified).....**

..... Unit: m<sup>2</sup>

The unit of measurement shall be the plan area of concrete surfacing to be placed, irrespective of shape, cross-sectional slope or longitudinal grade.

The rate tendered shall cover the cost of all labour, plant, materials, formwork and incidentals required to construct the surfacing complete as detailed on the drawings, including for the rounding the edges, trimming and compaction of the layer to receive concrete, in the positions and to the extent shown on the drawings, or directed on site, including sprayed bitumen emulsion primer or polyethylene sheeting, formwork, mesh reinforcement, where applicable, and for texturing. (Expansion joint will be measured elsewhere).

#### **Note :**

The testing of the surfacing will be carried out in terms of the applicable requirements of Clause 7 of SABS 1200 MK and PSMK 7 and payment for testing will be effected in terms of PSMK 8.2.3.

The acceptance criteria stated in PSMK 8.2.1 shall also apply to concrete surfacing placed in terms of this specification.

No additional payment will be made for forming voids or boxing out holes.

#### **“PSGA 8.9\* Construct raised pedestrian crossing complete.....Unit: m**

The unit of measurement shall be the linear meter of crossing constructed measured from one end to the other across the roadway. It should be noted that the average length of crossing is approximately 5 500 mm.

The rate tendered shall cover the cost of all labour, plant, materials, formwork and incidentals required to saw cut the existing bituminous surfacing, to excavate into the existing road surface and layerworks, and to construct the crossing complete as detailed on the drawings, including mortar layer under paving, for trimming and compaction of the layer to receive concrete, in the positions and to the extent shown on the drawings or directed on site, including sprayed bitumen emulsion primer or polyethylene sheeting, formwork, where applicable, and for texturing and colouring as shown. Road signs, road mark painting and paving will be measured elsewhere.

**“PSGA 8.10\* Construct speed control hump complete .....Unit: m**

The unit of measurement shall be the linear meter of crossing constructed as detailed on drawing PSMK 10/1 measured from one end to the other across the roadway. It should be noted that the average length of crossing is approximately 5 500 mm.

The rate tendered shall cover the cost of all labour, plant, materials, formwork and incidentals required to saw cut the existing bituminous surfacing, for keying-in, to excavate into the existing road surface and layerworks, and to construct the hump complete as detailed on the drawings. Road signs and road marking (painting) will be measured elsewhere.

**PSLC CABLE DUCTS**

**PSLC 1 SCOPE**

Add the following to subclause 1.1:

“This specification shall also cover the supply, laying and bedding in trenches of pipes as ducts for the provision and protection of telecommunication and data cables.”

**PSLC 2 INTERPRETATIONS**

**PSLC 2.1 SUPPORTING SPECIFICATIONS**

Add the following to this subclause:

“f) SABS 1200 GA

**PSLC 3 MATERIALS**

**PSLC 3.1 DUCTS**

Irrespective of this clause all pipes for cable ducts shall be as follows:

a) Data and telecommunication ducts:

Pipes shall be smooth bore, green, HDPE, Telkom approved ducting pipe, “Kabelflex” or similar approved, complete with push fit couplings and rubber sealing rings.

b) Electrical ducts:

Pipes shall be smooth bore, black, HDPE ducting pipe, “Kabelflex” or similar approved, complete with push fit couplings and rubber sealing rings.

**PSLC 3.2 BEDDING**

Delete sub-clauses 3.2.1 and 3.2.2 and replace with the following:



“Selected granular material shall be an aggregate, sand or granular material all of a non-cohesive nature, the grading analysis of which shows 100% passing a 13.2 mm sieve and not more than 5% passing a 0.075 mm sieve (Metric sizes). The Compactability Factor shall not exceed 0, 4.”

### **PSLC 3.3 BACKFILL**

Notwithstanding the provisions of this Clause, the material to be used for backfill in areas subject to road traffic loads shall be subbase quality material complying with the requirements of Clause 3.2.1 of SABS 1200 ME and PSME 3.2.1.

### **PSLC 3.4 CABLE DUCT MARKERS**

Where applicable, temporary markers shall be provided at the end of each duct.

The ends of all ducting pipes shall be temporarily marked with a 300 x 100 x 75 mm clay brick planted 200 mm vertically into the ground directly above the end plugs. The ends of the draw ropes shall be attached to this brick marker. The exposed part of the brick marker shall be painted as follows:

Electricity	Red
Telkom	Green
Communication	Yellow

Permanent markers shall be provided in accordance with the requirements of PSLC 5.10.

## **PSLC 5 CONSTRUCTION**

### **PSLC 5.1 EXCAVATION OF TRENCHES**

Material excavated other than hard rock, will not be separately classified for the purpose of measurement and payment. The unit rate for excavation shall cover excavation in soft and intermediate material.

#### **PSLC 5.1.1 Trench widths and depths**

Replace the contents of Clauses 5.1.1.1 and 5.1.1.4 with the following:

“Subject to the requirements of 5.2.4, trenches for ducts shall be excavated to widths determined in accordance with the following minimum requirements:

- Minimum trench width, 450 mm
- Minimum side allowance, 100 mm

- Minimum horizontal spacing between ducts measured at a coupling, 50 mm.”

Replace the contents of Clause 5.1.1.2 with the following:

“Subject to the requirements of 5.2.2.1 and 5.2.4 and unless otherwise shown on the drawings or ordered, trenches shall be excavated to such a depth that, after the duct or nest of ducts has been laid, there is a minimum cover to ground level of at least:

- a) 600 mm for communication and data ducts and
- b) 1 200 mm for electrical ducts.”

**PSLC 5.1.3\* Excavation for trenches at road crossings**

The requirements of PSDB 5.4 shall apply with the additional proviso that the minimum depth of cover over ducts shall be 300mm where construction traffic is liable to cross them. Road crossings shall therefore be constructed after the construction of the roadworks has reached the stage where the required cover is available.

**PSLC 5.3.3 Draw wire**

Notwithstanding the requirements of this Subclause, the nominal diameter of draw wire shall be 3 mm.

**PSLC 5.3.5\* Laying to grade**

Where two or more Telkom ducts of internal diameter greater than 75 mm are laid together in the same trench, the ducts shall be laid to a minimum grade of 1:400.”

**PSLC 5.6 LAYING OF TELECOMMUNICATIONS AND DATA DUCTS WITH OTHER SERVICES**

The horizontal separation between telecommunications ducts and other services shall be the maximum possible but in the case of electricity cables at least 300mm. Where the latter cannot be attained the ducts shall be separated from the cables by means of concrete protection slabs (see below) placed vertically.

No service other than telecommunications ducts shall be laid directly above and parallel to a telecommunication duct.

The concrete protection slabs mentioned above shall be 400mm square by 50 mm thick and shall be reinforced with welded mesh Ref. 193. The concrete used shall be 20 MPa/13 and the slabs shall be finished off to the satisfaction of the Engineer.

Replace the heading and contents of Subclause 5.7 with the following:

## **“PSLC 5.7 CROSSING OF TELECOMMUNICATION DUCTS WITH OTHER SERVICES**

Telecommunications ducts should preferably cross above other services. The radial separation at such crossings shall be the maximum possible but in the case of electricity cables at least 300mm. Where the latter cannot be attained, concrete protection slabs as specified in PSLC 5.6 shall be placed above the electricity cable for a distance of 800 mm on either side of the crossing (or below as the case may be).”

## **PSLC 5.8 ROAD CROSSINGS**

Delete the last sentence and replace with:

“The duct(s) shall extend a distance of at least 1m beyond the rear of kerb or walkway as applicable.”

## **PSLC 5.10 POSITION TO BE MARKED**

Replace the contents of this Subclause with the following:

Marking is required on both sides of the carriageway.

“The position of each duct shall be marked by imprinting a letter “I”, “T” and “E”, as applicable, into the wet concrete of extruded kerbs, directly above the duct. The imprint shall be 100 mm high and 10 mm deep and the tool used shall be of an approved shape and design.

Where there is no kerb face, or where pre-cast kerbs are used, the duct shall be marked with a concrete marker comprising a 150mm square by 300mm long, 20 moa/19 concrete block, with the appropriate letter imprinted on the square face. The marker shall be placed hard up against the edge of the road surface or the back of the kerb, level with the verge.”

## **PSLC 8 MEASUREMENT AND PAYMENT**

### **PSLC 8.1 GENERAL**

Add the following:

“Material displaced by the pipeline and by imported material from sources other than trench excavation, shall be disposed of at an approved site furnished by the Contractor. No haulage shall be payable for such material.”

### **PSLC 8.2.2 Schedule Items**

Replace the last line of the first paragraph of Subclause (a) “determined ..... drawing” with “determined in accordance with

the provisions of PSLC 5.1.1 and that ordered in terms of PSLC 5.6.”

Delete payment clause 8.2.2(b) and add the following:

“8.2.2(b) Extra over item (a) above for:

Hard rock excavation ..... Unit: m<sup>3</sup>

#### **PSLC 8.2.5 Supply, lay, bed and prove duct**

Add after “specified” in paragraph (a) of this clause “as well as the cost of complying with PSLC 5.3.5.”

The tendered rate shall further include all labour, plant, material and incidentals, including push fit couplings, rubber seal rings, end plugs, draw wire, protection during construction and marking of the duct ends.

Replace the heading and contents of Clause 8.2.6 with the following:

#### **PSLC 8.2.6 “Provision of selected granular material complying with PSLC 3.2**

(a) From commercial or off-site sources located by Contractor ..... Unit: m<sup>3</sup>

The rate tendered for shall cover the cost of acquiring, regardless of distance, the required bedding from commercial or off-site sources located by the Contractor, delivering it to points alongside the trench spaced to suit the Contractor’s method of working and disposing of material displaced by each importation within a freehaul distance of 0.5 km.

#### **PSLC 8.2.9 Overhaul of surplus excavation**

Delete this subclause.

**“PSLC 8.2.10\* Imported backfill (source and quality stated) ..... Unit: m<sup>3</sup>**

The provisions of Clause 8.3.3.1 of SABS 1200 DB shall apply, except that the trench width shall be determined in accordance with PSLC 5.1.1 or that called for in terms of 5.6.

**“PSLC 8.2.11\* Compaction in road reserves ..... Unit: m<sup>3</sup>**

The provisions of PSDB 8.3.3.3 shall apply, except that the trench width shall be determined in accordance with PSLC 5.1.1 or that ordered in terms of PSLC 5.6 and payment will be extra over that covered by 8.2.2(a)”.

**“PSLC 8.2.12\* Supply and installation of concrete protection slabs ..... Unit: No**

The rate tendered shall cover the cost of all labour, plant and material required to manufacture the protection slabs as specified in PSLC 5.6, as well as placing and bedding the slabs.

## PSLE STORMWATER DRAINAGE

## PSLE 3 MATERIALS

### PSLE 3.1(a) Precast concrete pipes

Interlocking joint pipes (Ogee) shall be used throughout.

**PSLE 3.1(d) Skewed ends**

Skewed ends may be cut on site using and approved concrete saw.

### PSLE 3.4.1 Bricks

Delete the first sentence, and replace with the following:

“Bricks used in stormwater structures shall be:

Burnt clay engineering bricks, having a nominal compressive strength of 28 MPa, and complying with the requirements of SABS 227.

### PSLE 3.5.9\* Subsoil / Flodrain Drainage System

The Flodrain system shall consist of a geonet drainage core and drainage pipe enclosed within a geotextile filter jacket. The Flodrain shall be supplied prefabricated with geopipe for assembly on site. The Flodrain shall have a minimum flow capacity of 0,19 l / s per metre (hydraulic gradient of unity and a pressure of 10 KPa) and shall not decrease in thickness by more than 20% under confining pressure of 10 kPa.

(a) Geonet Drainage Core

The core shall Kaytech Flodrain or approved equivalent, be non-corroding, rot-proof and manufactured from low density polyethylene with minimum characteristics as follows:-

Mass	822 g/m <sup>2</sup>
Thickness	5 mm
Tensile Strength:	2, 4 kN / m
Discharge capacity:3, 0 l/sec under 100 kPa at a hydraulic gradient of unity	

(b) Drainage Pipe

The geopipe to be used in conjunction with the prefabricated Flodrain shall be Kaytech Geopipe or approved equivalent, manufactured from high density polyethylene with not less than 60% of the surface perforated.

Geotextile filter jacket

The geotextile filter jacket to be used in conjunction with the prefabricated Flodrain shall be, Kaytech A1 or approved equivalent, with minimum characteristics as follows:

Thickness: 1,3 mm under 2 kPa

Permittivity: 3/s @ 100mm head

Porosity: 93% under 2 kPa

Throughflow: 300 l / s / m<sup>2</sup> head @ 100mm head

Permeability: 3.9m/s

**PSLE 5 CONSTRUCTION**

**PSLE 5.2.1 General**

With reference to the last sentence of the second paragraph of this Clause and without limiting the Contractor's responsibility in this regard, the minimum depth of cover during construction shall be as specified by the pipe manufacturer.

**PSLE 5.2.2 Pipe culverts**

Add the following:

"Unless otherwise stated in the Bill of Quantities or indicated on the drawing, pipes with ogee joints shall be used. Butt ended pipes will not be permitted.

Pipes with ogee joints, where they pass under roads and also on curved pipelines in verges, shall be wrapped with two layers of Hessian soaked in cementitious grout. The wrapping shall be 400mm wide and placed centrally over each joint.

Where pipes are cut, the ends shall be made good with an epoxy concrete mix so as to prevent rusting of the reinforcement or deterioration of the concrete."

**PSLE 5.5.6 Benching**

Delete "granolithic plaster" and replace by "concrete topping consisting of a 1:2:3 cement, sand and 7 mm stone mix by weight. The sand proportion may be varied between 1, 5 and 2, 5 to obtain ideal workability.

**PSLE 5.8\* INSTALLATION OF SUBSOIL / FLODRAIN DRAINAGE SYSTEM**

The geopipe shall be placed at the bottom of the geonet with the channel section of the geopipe as the invert of the drain.

The geotextile filter jacket shall then be wrapped around the geopipe and stapled/joined at 300mm intervals. The complete system shall then be placed in the trench ensuring that during backfilling the fin remains vertical.

## **PSLE 6 TOLERANCES**

### **“PSLE 6.6\* PIPES INTO MANHOLES / CATCHPITS**

Pipes may protrude up to 300 mm into a manhole / catchpit. This relaxation will only be permitted if the pipe does not have to be cut. The “dead space” formed at the end of the manhole is to be suitably benched off to prevent the collection of silt and rubbish.”

### **“PSLE 6.7\* “RECORD” DETAILS**

The Contractor shall submit as-built/record levels, distances between manholes and the grades of pipelines for which he requires payment, at the time he submits his monthly payment claim. A sample form is obtained from the Engineer.”

## **PSLE 8 MEASUREMENT AND PAYMENT**

### **PSLE 8.2.1 Supply and lay concrete pipe culverts**

Notwithstanding the stated provisions, bedding will be measured for payment in terms of the appropriate clauses of SABS 1200 LB and PSLB.

Add the following:

“The tendered rate shall also cover the cost of any additional work to wrap joints as specified in 5.2.2 and caulk lifting eyes.”

### **PSLE 8.2.8 Supply and install manholes, catchpits, and the like ..... Unit: No**

Delete the words “but excluding excavation and backfilling, which will be measured separately” and replace with “including dealing with any excavation in all materials (including disposal of surplus) which is additional to that measured under the item for pipe trench excavation (see subclause 8.2.3 of SABS 1200 DB)”.

Add to the contents of Clause 8.2.8 the following:

“(d) Inlets (type and depth range stated)

The rate shall cover the cost and dealing with any excavation (as if in sort excavation including disposal of surplus) that is additional to the measured under the item for pipe trench excavation, the supply of all labour, plant and materials required to complete the structures as inlet channelling, building in connecting pipes, any benching required and backfilling structures.”

**PSLE 8.2.13\* Subsoil / Flodrain Drainage System ..... Unit: m**

The composite drain will be measured linearly on slopes overall as laid. No deductions will be made for specials, but deductions will be made for the internal length of manholes. Separate items will be scheduled for different diameters of pipes, where relevant.

The rate shall cover the cost of providing the Subsoil / Flodrain drain and the cost of laying, bedding, backfilling, jointing and making connections into manholes.

**PSLE 8.2.14\* Jointing with existing network ..... Unit: Sum**

The tendered sum shall include full compensation for the cost of all labour, plant, materials, excavation, backfilling, compaction and overheads to join the subsurface drains to the existing stormwater network.

**PSLE 8.2.15\* Breaking into existing manhole and installing new pipe**

a) (State pipe diameter and type) ..... Unit: Sum

b) (Etc for other diameters and types) ..... Unit: Sum

The tendered rates shall include full compensation for the supply of all labour, plant and materials, making an opening in the existing manhole, installing the new pipe in the new opening, sealing around the pipe, breaking out the existing benching and channels where required and reconstructing them complete with rendering to suite the new pipe arrangement, disposing of all debris to the dumping site and backfilling around the manhole with selected material.

**PSLE 8.2.16\* Breaking into existing stormwater pipe, installing new pipe and building new manhole**

a) (State pipe diameter and type) ..... Unit: No

b) (Etc for other diameters and types) ..... Unit: No



The tendered rates shall include full compensation for the supply of all labour, plant and materials, removing a section of the existing stormwater pipe, installing the new pipe, constructing the complete, new manhole, sealing around the pipes, disposing of all debris to the dumping site and backfilling around the manhole with selected material."

**PSLE 8.2.17\* Removing existing headwalls ..... Unit: No**

The rate shall include for all labour, plant and materials required for excavation for removing the existing headwall, loading and transporting to a spoil site, connecting of new pipe, benching where necessary and making good around the pipe and all necessary reinstatement of the connection.

**PSM ROADS (GENERAL)**

**PSM 6 TOLERANCES**

**"PSM 6.4\* DIMENSION AND LEVEL CONTROL**

The Contractor shall submit to the Engineer a record of the surface levels of the section of layer under consideration, prior to requesting inspection and acceptance control testing.

The levels shall be taken at chainage intervals and co-ordinates that coincide with those given on the drawings.

**PSM 7 TESTING**

**PSM 7.1 GENERAL**

Notwithstanding the provisions of this Clause, the Contractor shall note that the random sampling method of TMH 5 for the spotting of positions for field density testing will not necessarily be applied by the Engineer.

Testing shall be carried out where in his opinion the density is suspect.

The Contractor shall further present the full width of the layer between the stated linear stake values for acceptance. Only in exceptional cases may partial widths be presented.

**PSM 7.2 PROCESS CONTROL**

Add the following:

"Process control to be carried out by the Contractor shall be executed by an independent testing laboratory approved by the Engineer."

**PSM 7.3 ROUTINE INSPECTION AND TESTING**

Add the following to Clause 7.3.1:

"All requests for acceptance control testing shall be submitted in writing to the Engineer. Each request shall clearly specify the exact location of the section and the description and type of the layer, and shall be accompanied by the dimension and level control data for the section under consideration (refer PSM 6.4), as well as the results of the Contractor's process control testing (refer 7.2).

On receipt of the aforementioned the Engineer will undertake, or arrange as the case may be, for the necessary inspection and acceptance control tests to be carried out to satisfy himself that the layer complies with the specification.

Testing will be carried out as expeditiously as possible and the results of tests made available within 48 hours from the time the request was made, plus the normal time required to do the test.

The written approval of the submitted section of a layer shall be obtained from the Engineer before the Contractor may proceed with the placing of material for the following layer. The Contractor shall also, before proceeding with the placing of the material for the following layer, make good any test holes left in the layer using material complying with the specification for that layer and compacting it to the specified density applicable to for that layer. Concrete shall not be used."

## **PSM 8 MEASUREMENT AND PAYMENT**

Add the following:

"Should the layer submitted for acceptance control testing fail to comply with the specification, the Contractor shall, in the case where the tests arranged for by the Engineer were carried out by a designated laboratory (refer PSA 7.2), bear the invoiced cost of the tests. Conversely, should it be found that the layer complies with the specification, the cost of the acceptance control tests will be borne by the Employer. The cost of refilling and compacting the test holes shall be covered by the rate tendered for the construction of that layer."

## **PSME SUBBASE**

### **PSME 1 SCOPE**

Add the following

"All the requirements as specified for the construction of subbase shall, except where otherwise stated or ordered, apply to the stabilization of the in situ material as new subbase."

## **PSME 3 MATERIALS**

### PSME 3.2.1 Subbase material

Replace the contents of paragraph (a) with the following:

- "a) The maximum particle dimension of the coarse aggregate shall not exceed 63 mm."

Replace the contents of paragraphs (d) and (e) with the following:

- "(d) The CBR at 95% of modified AASHTO maximum density shall be at least 45 for unstabilised as well as for stabilised material prior to stabilisation or as directed by the Engineer.

- e) The UCS at 7 days of each cement-stabilized material shall at 100% of modified AASHTO maximum density be as follows:

- For C3 cemented natural gravel : 1,50 MPa minimum
- For C4 cemented natural gravel : 0,75 MPa minimum"

With reference to Subclause d) (ii) and d) (iii), the regional factor for Port Elizabeth shall be taken as 0,6.

### PSME 3.3.1 General

Add the following to this Sub-clause:

"Where reference is made in this specification or the Standard Specifications to the cement specifications, e.g. SABS 471: Portland cement and rapid hardening Portland cement, it shall be replaced with the new specification: SABS ENV 197-1: Cement-composition, specifications and conformity criteria Part 1: Common cements.

Furthermore, where reference is made in this specification or the Standard Specifications to different cement types, the following new names shall be used as a guide but must be confirmed by the Engineer.

Cement Grade	Cement Type	Approximate old product name	New Alpha	New Blue Circle	New NPC	New PPC	New Slagment
52.5	CEM I	Rapid hardening	Rapid Hard	Duracast	Eagle Super		-
42.5R	CEM I	Rapid hardening	-	-	-		-
42.5	CEM I	OPC*	Portland Cement	Duratech	-	OPC	-
	CEM I	LASRC	-	-	-	LASRC	-
	CEM II A-S	PC15SL	-	-	Eagle Plus	-	-
	CEM II B-S	RH30SL		-	Eagle Plus	-	-

Cement Grade	Cement Type	Approximate old product name	New Alpha	New Blue Circle	New NPC	New PPC	New Slagment
32.5R	-	-	-	-	-	-	-
32.5	CEM II A-V	PC15FA	All – purpose cement	-	-	Surebuild	-
	CEM II A-W	PC15FA	-	-	-	Surebuild	-
	CEM II A-L	-	All purpose cement	-	-	Surebuild	-
	CEM II B-V OR W	PC25FA/PFAC* *	-	Structcrete	-	Surecrete	-
	CEM II B-V OR W	PC25FA/PFAC* *	-	Duracrete	-	Surecrete	-
	CEM III A	PBFC	-	BFC	Eagle Pro	-	PBFG
	CEM III A	RHSL	-	-	-	-	RHSL
22.5	MC 22.5X	PFAC***	Multi-purpose cement	Durabuild	-	-	-
	MC 22.5X	PFAC***	-	Buildcrete	-	-	-
12.5	MC 12.5	Walcrete	Mortar cement	Walcrete	-	Masonry	-
	MC 12.5	Mortacem	-	-	-	-	-

## PSME 5 CONSTRUCTION

### PSME 5.1 PRECAUTIONS

Add the following to this Sub-clause:

“No stabilization shall be carried out during falling temperatures when the ambient air temperature falls below 7°C or during rising temperatures when the ambient air temperature is below 3°C.

The surface temperature of a compacted stabilized layer shall not be allowed to fall below 1°C during the first three (3) days after stabilization. The Contractor shall be responsible for taking the necessary measures in this connection, and especially to refrain from stabilizing when such temperatures become probable.

When a sudden unforeseen temperature drop to a level below this limit occurs, the stabilized layer shall be covered with the material required for the next layer to be constructed.

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

The Contractor shall make allowance for these requirements in his construction programme, and no claims in this connection will be considered.”

The Contractor shall at all times supply all workers exposed to chemical stabilizing agents with approved protective apparel, eyewear and masks, and no person without such apparel, eyewear and masks shall be permitted to work with or be exposed to the chemical agents. Precautionary measure shall also be taken to ensure that any livestock and the public will not be exposed to the chemical agents blown by the wind or under similar circumstances”

**PSME 5.2.2    Borrow pits**

Insert the words “designated by the Engineer and” between the words “pits” and “established” in the first line.

**PSME 5.4.1    Placing**

The compacted thickness of the subbase for the various areas shall be that shown on the drawings.

**PSME 5.4.4    Compaction**

Notwithstanding the requirements of Clause 5.4.4.2 the subbase shall be compacted to 95% or 97% of modified AASHTO maximum density, as the case may be.

**PSME 5.7    TRANSPORT**

Delete the entire contents and replace with:

“The provisions and contents of subclause PSD 5.2.5 shall apply.”

**PSME 6    TOLERANCES**

**PSME 6.1.1    General**

Add the following:

“For layers, constructed of subbase quality material, on which the bituminous surface will be placed, the tolerance for dimensions and level shall be as set out in SABS 1200 MF Subclauses 6.1.2 to 6.1.6 inclusive.”

### **PSME 6.3 STABILIZATION**

Add the following to this Clause:

"The coefficient of variation shall not exceed 0, 3 (30%) for mixing in place and 0, 2 (20%) for plant mixed material, calculated as follows:

$$\frac{S_n}{X_n} \times 100$$

$$X_n$$

Where:

$X_n$  is the average and  $S_n$  is the standard deviation of stabilizing content per lot"

"PSME 6.4\* DIMENSION AND LEVEL CONTROL

The requirements of PSM 6.4 shall apply."

### **PSME 8 MEASUREMENT AND PAYMENT**

#### **PSME 8.1 BASIC PRINCIPLES**

Insert a semi-colon in the first line of paragraph b) after the words "will be paid for once only" and delete the rest of the paragraph.

Replace the contents of paragraph c) with the following:

"c) that except as provided for in d) below, the freehaul will be that specified under subclause 5.7 (as amended)."

Add the following to paragraph d):

"A commercial source shall be held to include any off site sources or borrow pits selected the Contractor.

Further, no additional payment will be made for the temporary stockpiling of material from commercial sources, the class of excavation, method of processing (except stabilizing) or for overhaul."

Add the following:

"e) The requirements of PSM 8.2 shall apply. The Contractor shall further make provision in the rates tendered for the construction of the subbase, for the cost of his own process control testing and the cost of complying with PSME 6.4."

Replace the contents applicable to subitem (a) of Clause 8.3.2 with the following:

"The rate for (a) shall include full compensation for excavating and selecting subbase material, for loading and transporting the material within the free-haul distance, and for either placing the material on the road or stockpiling the material for later use. When material is stockpiled, the rate shall include compensation for shaping and grading the stockpile so that it is free-draining."

**PSME 8.3.3 Construct the subbase course/shoulders/gravel wearing course with material from commercial sources or designated borrow areas**

Replace the heading of Clause 8.3.3 with the following:

"8.3.3 Construct the subbase course/shoulders/gravel wearing course with material from commercial sources ..... Unit: m<sup>3</sup>

Add the following:

"This item shall also apply to the construction of subbase course/shoulders/gravel wearing course with material from borrow pits selected by the Contractor.

No additional payment will be made for difficult work or hand operations in confined areas.

The rate tendered for subbase shall further differentiate between subbase beneath vehicular trafficked areas (rank and roadways) and subbase beneath pedestrian trafficked areas."

**PSME 8.3.9 Overhaul (haul exceeding 2 km)**

Delete the entire clause. The terms, provisions and principals of 8.1 and PSME 8.1 shall apply.

**PSMF BASE**

**PSMF 3 MATERIALS**

**PSMF 3.3 PHYSICAL AND CHEMICAL PROPERTIES**

**PSMF 3.3.1 Natural gravel (stabilised or unstabilised)**

Replace the contents of paragraph (a) with the following:

"(a) The maximum particle dimension of the material shall not exceed 63 mm."

**PSMF 3.3.2 Graded crushed stone**

Add the following after the words SABS 1083:

"for 37,5 mm stone".

**PSMF 5 CONSTRUCTION**

**PSMF 5.4.1 Placing**

Add the following:

"The compacted thickness of the base shall be as indicated on the drawings."

**PSMF 5.4.4.2 Compaction**

Delete 98% and 97% and replace with 102%.

Add the following:

“c) Where the compaction specified is in apparent density, the base material shall be compacted to 86% of

apparent density which shall determined as follows:

(i) Apparatus

- Balance to measure 5 kg accurately to within 0,5 g
- Pycnometer (e.g. a preservative jar with a flat ground rim)
- Temperature-controlled bath with thermostat capable of maintaining the temperature at  $25^{\circ}\text{C} \pm 1^{\circ}\text{C}$
- Thermometer ( $0^{\circ}\text{C} - 100^{\circ}\text{C}$ )
- Drying oven capable of maintaining temperatures between  $105^{\circ}\text{C}$  and  $110^{\circ}\text{C}$
- Towels
- 10% Teepol solution

(ii) Method

Take 3 000 g to 4 000 g of the material from a density hole in the road. All the material obtained from the hole should preferably be used. If there is too much for one pycnometer, the material may be divided between two pycnometers.

Dry the material to a constant mass in an oven at  $105^{\circ}\text{C}$  to  $110^{\circ}\text{C}$ .

Ensure that the pycnometer is clean, and determine its mass together with that of a marked sheet of glass.

Place the dried sample in the pycnometer and determine the combined mass of the pycnometer, glass sheet and sample. (The sample should not be more than half the pycnometer's volume.)

Add clean water at a temperature of  $25^{\circ}\text{C}$  to the pycnometer until it is approximately three quarters full.

Add three drops of the 10% Teepol solution to the water, close the pycnometer and shake thoroughly for 1 to 2 minutes.

Fill the pycnometer to near the brim with water at a temperature of  $25^{\circ}\text{C}$  and place it in a thermostatically controlled bath at  $25^{\circ}\text{C}$ . Leave for 30 minutes without disturbing.

Remove the pycnometer without shaking or jarring it and place it on a spread towel. Fill with water at a temperature of  $25^{\circ}\text{C}$  and slide the glass sheet carefully over the brim from one side. Make sure that no air bubbles are trapped beneath the glass sheet. Dry the pycnometer and the glass sheet carefully all over and determine the mass of the filled pycnometer plus the glass sheet.

Remove the contents of the pycnometer and clean and fill it in the same manner with water at a temperature of  $25^{\circ}\text{C}$ . Dry the pycnometer and determine the mass of the pycnometer filled with water together with the glass sheet.

(iii) Calculation



The apparent density of the material is calculated as follows:

Mass of pycnometer + glass sheet = a

Mass of pycnometer + glass sheet + material= b

Mass of material only = (b - a)

Mass of pycnometer + material + water +  
glass sheet = c

Mass of pycnometer + water + glass sheet= d

Apparent density of material =  $(b - a) / \{(d - a) - (c - b)\}$

**NOTES:**

- (1) Do not add any chemicals other than the Teepol solution to the water.
- (2) No suction should be applied to the water to remove air.
- (3) The temperature of the water should be  $25^{\circ}\text{C} \pm 1^{\circ}\text{C}$  and no other temperature should be used.
- (4) When two pycnometers are used, the apparent density is calculated from the weighted average of the two results."

**PSMF 5.9 TRANSPORT**

Replace the contents of this Clause with the following:

"All movement of material will be considered as free-haul. No haulage cost will be paid."

## **PSMF 6 TOLERANCES**

### **PSMF 6.1.2 Grade**

Delete the contents of Clauses (a) and (b) and replace by “the height of the edge of the channel above the top of the completed base is not less than the minimum thickness of asphalt surfacing, i.e. 5 mm less than the specified thickness. (Refer subclause 6.3.4 of SABS 1200 MH)”

### **PSMF 6.1.5 Cross-section**

Replace “25 mm” in the second line of this subclause with “10 mm”.

## **PSMF 7 TESTING**

### **PSMF 7.3.2 Routine inspection and testing**

Replace subclause 7.3.2 with the following:

“The density measured at all test holes shall be a minimum of 102% of modified AASHTO maximum density for the lot to be acceptable.”

Add the following new subclause:

“7.3.3 Where the compaction specified is in apparent density, the contents of 7.3.2 shall apply but Table 4 shall be replaced with:

TABLE 4 - APPARENT DENSITY OF BASE

Specified apparent density, %	Number of tests per lot	Minimum average density, %	Minimum value for any single test, %
86	4	86,1	82,7
	5	86,4	82,6
	6	86,5	82,4
	7	86,7	82,3
	8	86,8	82,2
	9	86,9	82,1

“

**PSMF 8 MEASUREMENT AND PAYMENT**

Replace the heading of Clause 8.3.3 with the following:

“PSMF 8.3.3 Construct base with material from commercial sources compacted to 102%

of modified AASHTO maximum density”

Add the following:

“No additional payment will be made for difficult work or hand operations in confined areas.”

**PSMF 8.3.9 Overhaul**

Delete the contents and replace with:

“The terms, provisions and principals of subclause 8.3.9 of SANS 1200 ME and PSME 8.3.9 shall apply.”

**PSMG BITUMINOUS SURFACE TREATMENT****PSMG 1 SCOPE**

This specification shall also cover the preparation of the existing bituminous surface treated roads and the application of the fog spray and slurry.

**PSMG 3 MATERIALS****PSMG 3.4 BITUMINOUS BINDER FOR SLURRY SEAL**

Add the following:

“The bituminous binder shall be a (CAT 60) cationic 60 % stable–grade bitumen emulsion that complies with the requirements of SANS 548. The quantity of bitumen in the mix shall be sufficient to provide a nett residual bitumen content of 11% measured by weight of dry aggregate for a Fine Grade Fine Slurry and 19% by weight of the dry aggregate for a Course Grade Fine Slurry. (Refer clause 3.3.2 of SANS 1200 M).”

### **PSMG 3.7 AGGREGATE FOR SLURRY SEAL**

Add the following:

“The aggregate used in the mixing of the slurry shall consist of clean, crushed stones fines and having the grading listed below. Should the fraction passing the 0, 075 mm sieve be insufficient, a portion of the mineral filler such as the Portland Cement shall be added in the proportion of 0,5% to 2,0% of the dry weight of the aggregate and the combined aggregate shall then have a grading within the following limits:

<u>Sieve Size (mm)</u>	<u>% Passing</u>
9,5	
6,7	
4,75	100
2,36	74 – 95
1,18	58 – 74
0,6	43 – 56
0,3	30 – 14
0,15	23 – 30
0,075	17 – 23

### **PSMG 5 CONSTRUCTION**

#### **PSMG 5.4.6 Fog spray**

Add the following:

“A fog spray shall be applied to the existing bituminous surface treated roads prior to the application of the slurry.

The fog spray shall be a diluted bitumen emulsion consisting of:

- 50 % Cationic stable-grade emulsion with 60% bitumen (CAT 60)
- 50% Water

The rate of application shall be 0, 5 litres per m<sup>2</sup>.”

#### **PSMG 5.5.5 Preparation of surface for slurry seal**

Add the following:

“Prior to the application of the fog spray as well as the slurry seal, the road surface shall be thoroughly cleaned before the application of such. All loose stone chippings, sand, debris, vegetation, etc. shall be removed from the road and carted away to an approved tip site.

The contractor shall spray, at his own expense, all grasses and weeds within the area to be slurred with an approved herbicide. This shall be applied at least 1 week before the application of the fog spray or slurry seal operation.

Manhole covers, other services covers, kerbs and channels shall be protected by adhesive paper or other suitable means and shall be removed after the slurry has set. The Contractor shall be required to locate and clean all of the abovementioned services on completion of the work, all to the satisfaction of the Engineer.”

#### **PSMG 5.5.6 Composition of slurry**

Add the following:

“The nominal mix proportions of the slurry shall be as follows:

a) Slurry seal aggregate (saturated volume)	1 m <sup>3</sup>
b) Stable-grade emulsion at mixing temperature	310 litres
c) Cement filler	0,01m <sup>3</sup>
d) Water (as required and directed by Engineer)	Approx. 235 litres”

#### **PSMG 5.5.8 Application of slurry seal**

Add the following:

“5.5.10 The road surface shall be lightly dampened with a fine spray of water immediately ahead of the work.

On some surfaces, the Engineer may direct that a tack coat of emulsion diluted in the proportion of one part of emulsion to three parts of water shall be sprayed prior to spreading slurry and, in such cases written instructions will be given to the contractor to carry out this operation after thorough cleaning of the road surface at the expense of the Municipality.

The slurry mix shall be discharged onto the surface in a creamy homogenous consistency and shall roll smoothly in a continuous mass in front of the squeegee blades. As far as is possible, the spreading operation shall continue without stopping. Care shall be taken to obtain smooth joints.

The squeegee squad shall ensure that all bare patches are covered and that any thick accumulations of slurry are levelled off or removed immediately. Patching shall be done immediately with slurry from the same batch in order to obtain a uniform colour.

Longitudinal joints shall be carefully overlapped to avoid lean strips which shall immediately be rectified if necessary. Edges of slurry surfacing shall present clean straight lines along the line of kerbs or channels.

The bitumen emulsion slurry shall consist of a mixture of emulsified bitumen, crushed stone aggregate, mineral filler and water correctly proportioned and mixed.

The slurry shall be applied to produce a total uniform coverage of not less than 200m<sup>2</sup> per 1m<sup>3</sup> of slurry for Fine Grade Fine Slurry and not less than 100m<sup>2</sup> per 1m<sup>3</sup> of slurry for Coarse Grade Fine Slurry.

The actual spread rate shall be determined on site, as it will vary from road to road. The existing stone texture shall not be visible through the dried slurry.

After the slurry has dried out and cured, it shall present a uniform appearance and have a skid-resistant texture and adhere firmly to the surface that has been sealed.

Provision must be made for dampening the road surface ahead of the slurry application."

## **PSMG 8 MEASUREMENT AND PAYMENT**

### **PSMG 8.4 SCHEDULED ITEMS**

Replace the heading and contents of subclause 8.4.10 with the following;

"PSMG 8.4.10 Fog Spray ..... Unit: m<sup>2</sup>

Separate items will be scheduled for each spray type, emulsion and grade.

The tendered rate shall cover the cost of cleaning the road surface areas, protecting the kerbs, channels and existing services, supplying all materials, plant and labour, mixing, spraying and for complying with all the requirements and specifications."

"PSMG 8.4.14\* **Slurry Seal (Fine Grade Slurry)** ..... Unit: m<sup>2</sup>

The tendered rate shall cover the cost of cleaning the road surface areas, protecting the kerbs, channels and existing services, placing guidelines, supplying all materials, plant and labour, mixing, spreading, rolling and for complying with all the requirements and specifications."

## **PSMH ASPHALT BASE AND SURFACING**

### **PSMH 3 MATERIALS**

#### **PSMH 3.1 PRIME**

With reference to Clause 3.1 the prime to be used shall be MC-30.

#### **PSMH 3.3 TACK COAT**

The tack coat to be used shall be a 30% anionic stable grade bituminous emulsion.

## **PSMH 4 PLANT AND EQUIPMENT**

## **PSMH 4.2 BINDER DISTRIBUTOR**

Add the following:

"The Engineer may authorize the application of the prime or tack coat by means of a hand operated sprayer. Prior to allowing the latter the Contractor shall submit in writing for the Engineer's approval his intended method to ensure that the spray temperature and rate of application will meet the specified requirements. The continuation of this authority will be dependent upon satisfactory results being achieved."

## **PSMH 5 CONSTRUCTION**

### **PSMH 5.1.1(b) For asphaltting**

Add the following:

"The Contractor shall make every endeavour to protect the surface of a primed area and shall employ measures, such as the packing of stones across the area at regular intervals, to limit the passing of traffic over the primed surface. Where in the opinion of the Engineer a primed surface has become unsuitable for the direct placement of the asphalt, a tack coat at the rate ordered shall be applied."

### **PSMH 5.1.5.1 Prime and tack coat**

Add the following Clause:

"d)\*When the moisture content of the upper 50 mm of the base layer is greater than 50% of

optimum moisture content."

### **PSMH 5.1.5.2 Asphalt**

Add the following Clause:

"c)\* When the temperature is not at least 14°C and rising."

### **PSMH 5.1.7 Rates of Application**

The MC – 30 prime shall be applied at a rate of 0, 7 ℓ / m<sup>2</sup>

### **PSMH 5.5.1 General**

Add the following to Clause 5.5.1:

"A continuously graded medium mix using an 80/100 Pen. bituminous binder and local quartzitic aggregate is required. The Type IVa (Asphalt Institute) hot mix also acceptable."

## **PSMH 6 TOLERANCES**

### **PSMH 6.3.2 Grade**

Add the following:

"Notwithstanding the stated tolerances, the grade shall be such that no ponding will occur."

### **PSMH 6.3.5 Cross-section**

Add the following:

"Notwithstanding the stated tolerances, at no point on the surfacing shall the level be below that of the adjacent low side concrete channel or edge strip."

## **PSMH 7 TESTING**

### **PSMH 7.1 MIX DESIGN**

The requirements as stated shall be submitted to the Engineer at least 1 week before the programmed date of the start of production.

#### **PSMH 7.2.4 Density testing**

Replace the second sentence of this Clause "Not more than ..... specified density." with:

"The density of all cores shall be equal to or greater than 95% of the Marshall density."

## **PSMH 8 MEASUREMENT AND PAYMENT**

### **PSMH 8.4 COMPUTATION OF QUANTITIES**

Notwithstanding the provisions of Clause 8.4.2, the unit of measurement for asphalt shall be the square metre of asphalt laid and compacted in accordance with the specifications.

#### **PSMH 8.5.1 Prime coat**

Add the following:

The rate tendered shall also provide for applying the prime using a hand operated sprayer, where required.

#### **PSMH 8.5.3 Tack coat**

Add the following:

The rate tendered shall also provide for applying the tack coat using a hand operated sprayer, where required.

Replace the heading and contents of Clause 8.5.4 with the following:

#### **“PSMH 8.5.4 Asphalt**

(Minimum thickness, type of asphalt and grade of bituminous binder specified)



The unit of measurement shall be the square metre of asphalt laid and compacted.

The rate shall cover the cost of preparing an approved design mix, the supply of all materials as per stated minimum contents including filler, the mixing and manufacture of asphalt in accordance with the specifications and approved design mix, hauling, placing and compacting the asphalt, any additional operations, the supply of hand operated equipment and handwork for working in areas inaccessible to normal plant, as well as for process control testing, protecting and maintaining the work as specified."

**PSMJ            SEGMENTED PAVING**

**PSMJ 5            CONSTRUCTION**

**PSMJ 5.1          PREPARATION**

Notwithstanding the provisions of this Clause, the construction of the earthworks and controlled layers shall be completed in accordance with the applicable requirements of SABS 1200 DM and SABS 1200 ME, and any amendments thereto, as well as the details shown on the drawings.

**PSMJ 5.4          LAYING OF UNITS**

Notwithstanding the provisions of this Clause, filler units shall be cut such that they are close fitting. No chopping or breaking of the units will be permitted.

**PSMJ 5.5          FILLING GAPS IN UNIT PATTERN**

Delete the contents of this Clause. Clause 5.4 and PSMJ 5.4 shall apply.

**PSMJ 8            MEASUREMENT AND PAYMENT**

**PSMJ 8.2.2    Construction of Paving Complete**

Add the following:

"Jointing sand applied to concrete interlocking pavers shall include a 2.5% cement stabilising agent and the rate tendered shall include all costs associated with the addition of this stabilising agent."

**PSMJ 8.2.3    Cutting units to fit edge restraints**

Delete the word "raking" in the first sentence of this Clause.

Add the following:

"The cutting of units to suit radii > 1,0m shall be classified as straight cutting."

**PSMJ 8.2.6    Laying pavers on existing concrete slab bedded on stabilised grit screed .m<sup>2</sup>**

Add the following new clause:

"Pavers to be laid on the existing concrete slab will be bedded on a 20 mm stabilised (1:10) cement grit (smaller than 5mm) screed.

If additional screed is required, over and above the 20mm already allowed for in order to achieve the desired longitudinal grades, then this additional screed will be paid for as an extra over item "

## **PSMK KERBING AND CHANNELLING**

### **PSMK 2 INTERPRETATIONS**

#### **PSMK 2.3 DEFINITIONS**

Add the following definitions:

"Backing The supporting concrete behind the edge of the precast kerb, as shown on the drawings and PSMK 2.

Screed Screed shall have the corresponding meaning as bedding material, Refer PSMK 3.9."

## **PSMK 3 MATERIALS**

### **PSMK 3.2.1 General**

Replace the contents of this Clause with the following:

"Refer to the Drawings as well as the NMBM's Standard Infrastructure Details for kerb and channel details."

### **PSMK 3.7.2 Concrete**

Notwithstanding the requirements of this Clause, the Contractor shall take note that the acceptability of extruded kerbing and channelling will be evaluated on the basis of the compressive strengths of cores taken. The Contractor shall therefore at his own discretion increase the grade of concrete used.

## **PSMK 3.8 CURING COMPOUND**

Notwithstanding the provisions of this Clause, the requirements of PSGA 3.8 shall apply.

## **PSMK 3.9 BEDDING MATERIAL**

Replace the contents with the following:

"The material on which precast concrete kerbs and channels are bedded shall consist of a 1 to 8 cement sand mix, or class 20/19 concrete where the layer is more than 30 mm thick. Refer also PSMK 2".

## **"PSMK 3.10\* CONCRETE FOR EDGING STRIPS**

The requirements of Clause 3.7 and PSMK 3.7.2 shall apply to concrete for edging strips."

## **PSMK 5 CONSTRUCTION**

### **PSMK 5.1 EXCAVATION AND BEDDING**

Delete the first paragraph viz. "Trenches for ..... grade."

### **PSMK 5.2 PRECAST CONCRETE KERBING AND CHANNELLING**

Replace "50 mm" in the second line with "10 mm minimum". For bedding more than 30 mm thick, the requirements of PSMK 3.9 shall apply.

Replace "15 MPa" in the last line with:

"(Class 20/19 concrete)"

#### **"PSMK 5.2.1\* Precast Concrete Kerbing and Cast-in-situ Concrete channelling**

After the precast kerbs have been laid to formwork for the channelling shall be set up. Expansion joints shall be allowed for at approximately 8 metres intervals, i.e. opposite the joint between the kerbs. The principles of Clause 5.4 shall apply to the construction of cast-in-situ channelling.

### **PSMK 5.8 MACHINE-LAID CAST-IN-SITU (EXTRUDED) KERBING AND CHANNELLING**

Before commencing kerb laying on the site, the first 50m length of kerb and channel to be constructed shall be regarded as trial kerb and channel. The Contractor shall demonstrate in the trial length the methods he proposes to use for the construction of the kerb and channel, including joints, texturing, the achievement of a smooth surface and dense fully compacted concrete. It may be constructed either in the recognised position in a road or elsewhere on the site in which case it shall be demolished, broken out and removed at the Contractor's expense.

The trial kerb and channel shall be constructed with the plant and equipment to be used on the works and the equipment's motion forwards and the handwork carried out on the extruded section shall be so controlled and used as to produce a kerb and channel to the shape, lines and levels specified.

The time taken to lay the test strip shall be recorded, which in the event of acceptance, shall be used to calculate a rate of extrusion which shall not be exceeded without the permission of the Engineer.

If the concrete in the trial strip fails to meet the test requirements, the Contractor may, at his own cost, cut further cores from the kerb and or channel up to a maximum of one core per 100m length. The strengths obtained on such cores, together with those tested on the instruction of the Engineer, shall be used to test compliance with the strength requirements.

The Contractor may, unless advised of any deficiencies in the trial kerb and channel, proceed with kerbing as soon as acceptable core test results are obtained.

In the event of deficiencies in the trial kerb and channel, the Contractor shall, at his own expense, demolish the rejected sections and remove to the designated tip site and

repeat the 50m long trial strip. This process shall be continued until the Contractor has produced kerb and channel in accordance with this specification. He may then proceed with kerb and channel construction proper. Any unacceptable trial length shall be broken out and removed to spoil, at the Contractor's expense before any subsequent trial length is permitted to commence.

Core test holes shall be filled with 30 MPa concrete mixed with a suitable adhesive compound.

No other means of testing the concrete will be considered and any kerb or channel not complying with all the requirements of the specification shall be broken out, removed to spoil and replaced at the Contractor's own expense.

The Contractor shall ensure that no change of circumstances or conditions is made to jeopardise the quality of the kerb and channel under construction. If, in the opinion of the Engineer, this does occur, he may order the construction of a further trial length of 50m of kerb and channel in accordance with the requirements of this specification. Work on the kerb and channel proper shall not proceed until a trial strip has been constructed in accordance with the requirements of this specification. No claims for delays will be considered by the Engineer on account of further trial lengths of kerbing being ordered.

#### **PSMK 5.8.3 Subbase preparation**

Delete in the first line from: "500 mm beyond" to "as relevant" and replace by "150 mm beyond the back face of the kerb". Note this dimension applies to the compaction width required for the road layer.

Notwithstanding the provisions of this Clause, where kerbing and channelling is to be constructed along existing travelled ways, the material at the founding level shall be trimmed to the required line and level and compacted to give a firm surface.

#### **PSMK 5.8.5 Curing**

Notwithstanding the provisions of this Clause, curing shall be carried out in accordance with the requirements of PSGA 5.4.7.

#### **PSMK 5.11 TRANSITION SECTIONS AND INLET AND OUTLET STRUCTURES**

Delete the words "and with the requirements of the Project Specification" in the second paragraph.

#### **"PSMK 5.13\* PRECAST CONCRETE KERBING AND CAST IN SITU CONCRETE CHANNELLING**

Precast concrete kerbing and cast in situ concrete channelling shall be constructed in accordance with the details shown on the drawings and the applicable requirements of Clauses 5.2 to 5.10.

The formwork for the channelling shall be set up after the precast kerbs have been laid. The channelling shall be cast in alternate sections approximately 2m in length and the construction joints so formed shall coincide with joints in the precast kerbing, except that an expansion joint in lieu of a construction joint shall be provided at approximately 8m intervals. Where applicable, expansion joints in the channelling shall coincide with those in the precast kerbing."

## **"PSMK 5.14\* EDGING STRIPS**

Edging strips shall be constructed in accordance with the details shown on the drawings and the applicable requirements of Clauses 5.2 through to 5.10."

The formwork for the channelling shall be set up after the precast kerbs have been laid. The channelling shall be cast in alternate sections approximately 2m in length and the construction joints so formed shall coincide with joints in the precast kerbing, except that an expansion joint in lieu of a construction joint shall be provided at approximately 8m intervals. Where applicable, expansion joints in the channelling shall coincide with those in the precast kerbing."

## **PSMK 6 TOLERANCES**

### **PSMK 6.1 CONCRETE KERBING AND CHANNELLING**

Replace the permissible deviation "0, -10" applicable to item b (1) with "±10".

Add to item b (1):

"provided the base layer thickness is not prejudiced and no adverse grade results."

## **PSMK 7 TESTING**

### **PSMK 7.2.2 Alternative tests**

Delete in Clause 7.2.2.2 all references to cubes and cube testing.

Add to second line of Clause 7.2.2.2 after "SABS Method 865" the following:

"The numerical value of the compressive strength of the core used for adjudication shall be that value determined in accordance with Clause 6.3 of SABS Method 865."

Delete in fourth line of Clause 7.2.2.2: "22 MPa (i.e. less than 25 - 30 MPa)" and replace by: "20 MPa".

### **PSMK 7.3 RESPONSIBILITY FOR COSTS OF TESTING, ETC**

Delete this Sub-clause.

## **PSMK 8 MEASUREMENT AND PAYMENT**

### **PSMK 8.1 BASIC PRINCIPLES**

Replace the second sentence of Clause 8.1.1 with the following:

"Deductions will be made for transition kerb and channel pieces, structures and pedestrian slopes, which will be measured separately."

Replace the heading and amend the contents of Clause 8.2.1 as follows:

#### **PSMK 8.2.1 Concrete kerbing ..... Unit: m**

Add after "and for bedding" in the second line of Clause (b), "irrespective of variations to the thickness of the bedding".

Replace "7.2" in the second line of Clause (b) with "7.1".

Add at the end of Clause (b) "as well as for the supply and placing of the class 20/19 concrete backing, irrespective of variations to the thickness of the backing".

Replace "5.8.2" in the third line of Clause (e) with the following: "5.8.3"

Replace "1000m" in the second last line of Clause (e) with "600m"

Delete the following in the second last line of Clause (e):

"and as specified in clause 7.2"

**PSMK 8.2.2 Concrete kerbing and channelling combined ..... Unit: m**

Add: "Acceptance of work that is substandard in measured compressive strength shall be subject to reduced payment at the following percentages of the tendered rate for the item.

**Measured compressive strength of individual core % of full payment**

15 MPa up to 20 MPa	20
---------------------	----

Less than 15 MPa	Nil
------------------	-----

Replace the heading and contents of Clause 8.2.3 with the following:

**"PSMK 8.2.3 Tests on cast in situ of extruded kerbing and channelling:**

(a) Core strength tests..... Unit: No

(b) Set of three cores..... Unit: No

The rate tendered shall cover the cost of preparing a test specimen, despatching to an approved laboratory, testing and making good.

A test, the results of which show that the kerbing fails to comply with the requirements of the specification will irrespective of whether the kerbing is accepted for payment in terms of PSMK 8.2.2, not be measured for payment.

**Note:**

The Engineer reserves the right to arrange for testing if the Contractor fails to expeditiously do so, or to undertake all testing, in which case the rates tendered shall not apply. If the coring and testing is carried out via the NMBM Road Laboratory the Contractor will be debited with the cost of the test when the measured compressive strength is less than 20 MPa."

**PSMK 8.2.6.1 Ancillaries**

Add to Clause 8.2.6.1: "The unit of measurement of 2 metre length of kerb and channel transition between mountable and barrier type kerb and channel and between mountable or barrier type and the precast support kerb at the catchpit shall be per number."

**PSMK 8.2.15\* Construct concrete pedestrian slope complete as shown on PSMK 8/7** Unit: No

The unit of measurement shall be the number of pedestrian slopes constructed as detailed on PSMK 8/7 and shall include all transition pieces, sunken kerbs and channelling. The average width of the road for the motor slope can be taken as 5,5 meters.

The rate tendered shall cover the cost of all labour, materials, plant and incidentals required to construct the concrete sloped area as detailed on PSMK 8/7 inclusive of all excavations, for supplying 150mm subbase quality material from commercial sources compacted to 95% of modified AASHTO maximum density placing to the required levels, watering, shaping and compaction, supplying and placing concrete, forming of joints, screeding, surface finishes as well as for the disposal of all surplus and waste material.

**PSMK 8.2.16\* Construct residential concrete motor slope complete as shown on PSMK 8/6** Unit: No

The unit of measurement shall be the number of residential motor slopes constructed as detailed on PSMK 8/6, based on a ramp width of 3 m, and shall include all transition pieces, sunken kerbs and channelling.

The rate tendered shall cover the cost of all labour, materials, plant and incidentals required to construct the concrete sloped area as detailed on PSMK 8/6 inclusive of all excavations, for supplying 150mm subbase quality material from commercial sources compacted to 95% of modified AASHTO maximum density placing to the required levels, watering, shaping and compaction, supplying and placing concrete, forming of joints, screeding, surface finishes as well as for the disposal of all surplus and waste material.

An extra-over payment item shall be provided to allow for motor slopes with additional ramp widths.

**PSMK 8.2.17\* Bollards - Concrete** ..... Unit: No

The rate tendered shall cover the cost of supplying and installing, including the excavation and disposal of surplus material, the bollards complete with concrete bases as detailed on the drawing PSMM 55.

**PSMM            ANCILLARY ROADWORKS**

**PSMM 3        MATERIALS**

**PSMM 3.2     ROAD SIGNS**

**PSMM 3.2.1   General**

Replace "South African" with "SADC" in the first sentence.

Replace "Council for Scientific and Industrial Research" in footnote 1 with "Government Printer".

### **PSMM 3.2.2 Structural steel**

Delete the words "except that they shall be of D-shape cross-section" in the first paragraph.

Add the following:

"All steel sign supports shall be hot-dip zinc coated (galvanised) in accordance with SANS 763 for type A1 or B2 articles, as may be applicable."

### **PSMM 3.2.4 Steel plate**

Replace the entire contents of this Clause with the following:

"

#### **a) Steel plate**

Steel plate for road signs shall be 1,40 mm thick prepainted galvanized steel plate (Isacor G275 Chromadek or approved equivalent), which has been treated on both sides with an epoxy primer followed by a silicone polyester top coat. The total dry thickness of the treatment shall be at least 25 µm.

The reverse side of a stop sign and all its derivatives shall be painted white. The reverse side of all other signs shall be dark grey.

Where a reflectorised road sign is required, its reverse side shall be painted with a dull grey prime coat and the face with only the specified top coat.

#### **b) Steel Profiles**

Standard sign profiles shall be 200 mm sections with a thickness of 1,0 mm, manufactured from prepainted galvanized mild steel substrate (Isacor G275 Chromadek or approved equivalent), and shall comply with the details on the drawings."

### **PSMM 3.2.8 Paints and protective coatings**

#### **PSMM 3.2.8.1 Structural steel sign supports and sign face frames**

Replace the contents of this Clause with the following:

"The reverse side of all R1 Stop-signs and all its derivatives shall be painted white. The backs of all other road sign faces shall be painted dark grey. The colour code of the paint shall be code No G13 according to the SANS 1091 classification.

No galvanised steel supports shall be painted. All surface damage to galvanising shall be made good with a proprietary galvanising product."



### **PSMM 3.2.9 Retro-reflective material**

Delete subclause 3.2.9 and replace with:

“Retro-reflective material shall be supplied in the following grades and shall comply with the requirements of SABS 1519 and the adhesion requirements of CKS 191:

- Class I material – 7 year warranty grade
- Class II material – 10 year warranty grade
- Class III material – 15 year warranty grade
- Class IVB material – 15 year warranty grade

The specific commercial product used shall be subject to the approval of the Engineer.

No materials from different manufacturers shall be overlaid without specific approval of the Engineer and subject to such conditions as the Engineer shall impose.

Each sign shall be completed with the retro-reflective material from one and the same roll. No sign shall be manufactured from retro-reflective material from different rolls.

The material shall be supplied with a pressure sensitive or heat applied adhesive backing protected by a removable lining. The adhesive backing shall be applied to the sign face in strict accordance with the retro-reflective material manufactures specifications.”

### **PSMM 3.2.12\* Street Name Boards**

Street Name Boards shall be as specified on Municipal Standard Detail Drawings PSMM 54.

## **PSMM 3.3 ROAD MARKING MATERIALS**

### **PSMM 3.3.1.1 Non reflectorised paint**

Replace “SABS 731” with “SANS 731-1 : 1995”

Add the following:

“The paint shall be Type 1, 2 or 3 and shall be of a drying classification Class 1 in accordance with SANS 731-1”. The paint shall be Plascon Hysheen Road and Runway Marking Paint Products TP24, 41 or 88 or similar approved.

The possible use of Plascon Hysheen Aquafest Road Marking Paint WTP1 as the final application on-site shall be considered at the end of the Defects Liability Period”.

### **PSMM 3.3.1.2 Reflectorised paint**

Replace this Clause with the following:

“Reflectorised paint shall comply with the requirements of PSMM 3.3.1.2 as well as the retro-reflectivity requirements set in SANS 731-1 paragraph 4, 17.3 for new markings.”

### **PSMM 3.3.1.3 Colour**

Delete in the first line from “white or an acceptable match” and replace with:

“G80 Cloud White, B49 Golden Yellow and A11 Signal Red as shown in SABS 1091.”

## **PSMM 5 CONSTRUCTION**

### **PSMM 5.2 ROAD SIGNS**

#### **PSMM 5.2.1 Manufacturing**

##### **PSMM 5.2.1.2 Backing plates and boards**

Add in the first sentence after “drawings” the following:

“and SADC Road traffic signs manual, Volume 4 to comply with the National Road Traffic Regulations, 2000.”

Delete “...steel plate...” in second sentence and replace with:

“1, 40 mm thick prepainted galvanized steel plate (Isacor G275 Chromadek or approved equivalent), 1 mm thick 200 mm prepainted galvanized mild steel profiles (Isacor G275 Chromadek or approved equivalent),”

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 Engineer with a 100 mm x 150 mm 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.

Chromadek section shall be assembled in accordance with the details on the Drawings.

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 a practical visual match of the specified colour.”

##### **PSMM 5.2.2.5 Painting of road signs**

Delete the entire Clause and replace with the following:

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

Where applied to Chromadek sections, retro-reflective material shall be applied as specified in Clause PSMM 5.2.12 of this project Specification.”

Road sign boards shall be manufactured by a recognised manufacturer of road signs.

Retroflexive material shall be affixed to the road sign board face in strict accordance with the requirements and specifications of the retro reflective sheeting manufacturer.

No silk-screening of road sign faces shall be acceptable other than the screening of black symbols on Regulatory or warning signs.”

#### **PSMM 5.2.4.2 Erection**

Add the following:

“Vertical clearances for all signs shall be at the preferred height of 2.1 m unless otherwise specified on the design drawings.”

### **PSMM 5.3 ROAD MARKINGS**

#### **PSMM 5.3.2 Surface preparation**

Insert the following before the last sentence:

“The areas where new markings shall be painted shall be thoroughly cleaned by acid pickling with a diluted product like Aquasolv Degreaser or similar, scrubbing with a steel brush and rinsing it with fresh water.

All run-off shall be intercepted and treated prior to wasting into a stormwater system. No paint shall be applied on wet or untreated concrete surfaces. The need to apply a primer prior to the application of the paint shall be assessed before the final markings are applied.”

Add the following:

“At the end of the Defects Liability Period the markings shall be repainted on cleaned and degreased surfaces in accordance with the paint manufacturer’s specifications.”

#### **PSMM 5.3.3 Setting out of road markings**

In the second paragraph, replace “Road Traffic Ordinance”, and “South African” with (National Road Traffic Regulations, 2000” and “SADC” respectively.

### **PSMM 5.5\* STREET NAME BOARDS**

Poles shall be erected at the positions shown on the drawings and name blades attached as ordered. The correct spelling of the names of the streets, etc. to appear on the blades will be supplied in writing by the Engineer.

### **PSMM 8 MEASUREMENT AND PAYMENT**

#### **PSMM 8.3.1 Sign Faces with ..... etc.**

Delete the entire Clause and replace with the following:

“PSMM 8.3.1 Road sign boards with painted or coloured semi-matt background. Symbols, lettering and borders in semi-matt black or in Class I retro-reflective material, where the sign board is constructed from:

- a) Prepainted galvanised steel plate (Chromadek 1, 4 mm thick) or approved equivalent (Sign number, size and name stated) ..... Unit: No

The unit of measurement shall be the number of signs supplied and erected.

The tendered rate shall include and cover the cost of supplying and erecting the complete sign, for procuring and finishing all the materials, and for manufacturing and supplying the completed road sign, including amongst others the supporting framework, reinforcement, cross-bracing, struts, fixing brackets, angle-irons, channel profiles, galvanizing (if specified), painting, retro-reflective or semi-matt black lettering, symbols, numbers, arrows, emblems and borders, for attaching the road sign board to a support structure, or to an overhead road sign structure, or to an overbridge, and for transport, handling, etc necessary for the manufacture, completion, delivery and installation of the road sign board complete as specified.

The rates tendered shall further include full compensation for the additional cost of providing retro-reflective background, symbols, lettering numbers, arrows, emblems and borders of the type specified in each case.

- b) Prepainted galvanised steel profile (200 mm high, Chromadek 1, 0 mm thick) or approved equivalent (Sign number, size and name stated) ..... Unit: No

The unit of measurement shall be the number of signs supplied and erected.

The tendered rate shall include and cover the cost of supplying and erecting the complete sign, for procuring and finishing all the materials, and for manufacturing and supplying the completed road sign, including amongst others the supporting framework, reinforcement, cross-bracing, struts, fixing brackets, angle-irons, channel profiles, galvanizing (if specified), painting, retro-reflective or semi-matt black lettering, symbols, numbers, arrows, emblems and borders, for attaching the road sign board to a support structure, or to an overhead road sign structure, or to an overbridge, and for transport, handling, etc necessary for the manufacture, completion, delivery and installation of the road sign board complete as specified.

The rates tendered shall further include full compensation for the additional cost of providing retro-reflective background, symbols, lettering numbers, arrows, emblems and borders of the type specified in each case."

### **PSMM 8.3.8\* Dismantling and disposal of ground mounted road signs**

- (a) Sign panels of all materials, with surface area of:

- (i) up to 2 m<sup>2</sup> .....m<sup>2</sup>
- (ii) exceeding 2 m<sup>2</sup> but not 10m<sup>2</sup> .....m<sup>2</sup>
- (iii) exceeding 10 m<sup>2</sup> .....m<sup>2</sup>

- (b) Sign supports (all diameters) .....No

The unit of measurements shall be the square metre of sign panels of all materials in each size group dismantled and disposed of.

The unit of measurements shall be the number of sign supports dismantled and disposed of.

The tendered rate shall include full compensation for dismantling and disassembling the road signs as specified, loading, transporting, off-loading and disposing of the materials as required by the Engineer. They shall also include compensation for restoring the site where the road signs have been dismantled.

The tendered rate for 8.3.8(b) shall also include full compensation for demolishing the concrete footings of existing signs to at least 200 mm below the adjacent ground level, disposing of the resulting debris at approved dumping sites provided by the Contractor, and cutting timber or steel support structures at not less than 200 mm below the adjacent ground level.”

**PSMM 8.3.9\* Dismantling and disposal of overhead road signs with a surface area of:**

(a) exceeding 2m<sup>2</sup> but not 10m<sup>2</sup> .....m<sup>2</sup>

(b) exceeding 10m<sup>2</sup> .....m<sup>2</sup>

The unit of measurement shall be the square metre of sign panel in each size group dismantled and disposed of.

The tendered rate shall include full compensation for dismantling the road sign as specified, loading, transporting, off-loading and disposing of the signs as required by the Engineer.”

**PSMM 8.3.10\* Extra-over item 8.3.4 for hard rock excavation .....m<sup>3</sup>**

The unit of measurement shall be the in-situ cubic metre of rock excavated within the excavation limits specified in item 8.3.4.

The tendered rate shall include full compensation for the additional cost of excavating in rock.”

**PSMM 8.4.1 Non-reflectorised paint, etc**

Delete unit rates in subitem (a) and (b) “...km.” and replace with “m”.

Add new subitem as follows:

(f) Red lines (broken and unbroken) (width of line indicated) .....m

Amend the last line of the last sentence from “...markings...” and replace with “...and including the setting out and premarking of lines.”

**“PSMM 8.6\* Removal of existing, temporary or permanent road markings by:**

- (a) Sandblasting ..... m<sup>2</sup>  
(b) Overpainting as temporary measure .....m<sup>2</sup>

The unit of measurement shall be the square metre of road marking removed or obliterated.

The tendered rate shall include full compensation for the necessary equipment, labour and materials for any specific protection measures, accommodation of traffic, and the cleaning of the area of all dust, all as specified.”

## C3.5 : MANAGEMENT

### C3.5.1 APPLICABLE SANS 1921 STANDARDS

The following parts of SANS 1921 (Construction and management requirements for construction works) and associated specifications are applicable:

SANS 1921-1: General engineering and construction works  
SANS 1921-2: Accommodation of traffic on public roads occupied by the contractor  
SANS 1921-3: Structural steelwork  
SANS 1921-4: Third party management support in works contracts  
SANS 1921-5: Earthworks activities, which are to be performed by hand  
SANS 1921-6: HIV / AIDS awareness

SANS 1921-1: General engineering and construction works	
Clause No	Specification data
4.3	<p>The Contractor shall submit within the period stated in the Contract Data a suitable and realistic construction programme for the consideration of the Engineer.</p> <p>The programme shall be in the form of a Gant Chart and shall include the following details:</p> <ul style="list-style-type: none"><li>• A work breakdown structure, identifying the major activity groups.</li><li>• For each activity group further details shall be provided with regard to the scheduled start and end dates of individual activities.</li><li>• The linkages between activities shall be clearly indicated and the logical network upon which the programme is based should be separately submitted to the engineer if requested. Any constraints shall be classified as being time-related or resource-related.</li><li>• The critical path(s) shall be clearly indicated and floats on non-critical activities shall be shown.</li><li>• The Contractor shall indicate the working hours per day, night, week and month allowed for in the programme.</li><li>• Where relevant the Contractor shall state the production rates for key activities, e.g. earthworks, etc.</li><li>• Together with the programme as detailed above the contractor shall submit to the engineer a cash flow projection, indicating projected monthly invoice amounts. The cash flow projection shall be updated at monthly intervals to reflect actual payments to date and anticipated further payments.</li><li>• The programme shall be reviewed at the monthly site meetings at which the Contractor shall provide sufficient detail that will allow the comparison of completed work per activity that has fallen behind. The updated programme</li></ul>

SANS 1921-1: General engineering and construction works	
Clause No	Specification data
	<p>shall be submitted to the Engineer at least two days prior to the monthly meetings.</p> <ul style="list-style-type: none"> <li>• If the programme has to be revised by reason of the Contractor falling behind his programme, he shall produce a revised programme showing how he intends to regain lost time in order to ensure completion of the Works within the time for completion as defined in the General Conditions of Contract or any granted extension of time. Any proposal to increase the tempo of work shall be accompanied by positive steps to increase production by providing more labour and plant on site, or by using the available labour and plant on site, or by using the available labour and plant in a more efficient manner.</li> <li>• Failure on the part of the Contractor to submit the programme or to work according to the programme or revised programmes shall be sufficient reason for the Engineer to take steps as provided in the General Conditions of Contract.</li> <li>• The approval by the Engineer of any programme shall have no contractual significance other than that the Engineer will be satisfied that the work is carried out according to such programme and that the Contractor undertakes to carry out the work in accordance with the programme. It shall not limit the right of the Engineer to instruct the Contractor to vary the programme if required by circumstances. The Contractor is also referred to the applicable clauses of the General Conditions of Contract when drawing up his programme.</li> <li>• The planning, program and method statements are to comply with the following: <ul style="list-style-type: none"> <li>○ Microsoft Project format</li> </ul> </li> </ul>
4.12.2	<p>The samples of materials, workmanship and finishes that the contractor is to provide and deliver to the employer are:</p> <p>.....</p> <p>.....</p> <p>.....</p>
4.12.2	<p>The fabrication drawings which the contractor is to provide and deliver to the client are:</p> <p>.....</p> <p>.....</p> <p>.....</p>
4.14.3	<p>The office accommodation, equipment, accommodation for site meetings and other facilities for the use by the employer and his agents are:</p>



SANS 1921-1: General engineering and construction works	
Clause No	Specification data
	<ul style="list-style-type: none"> <li>• Site office complete with desk, 3 chairs, 2 filing cabinets and plan layout table. Such an office shall be minimum 12m<sup>2</sup> in area with a hard floor, ceiling 3m in height, well ventilated with good lamination to provide sound proofing</li> <li>• Site meeting room complete with conference table and 10 chairs. Such an office shall be minimum 20m<sup>2</sup> in area with a hard floor, ceiling 3m in height, well ventilated with good lamination to provide sound proofing.</li> <li>• Electric lighting and power points in above rooms</li> <li>• 2 Carports</li> <li>• Cell phone and/or telephone and fax facilities</li> <li>• Ablution facilities for the Engineer and his staff.</li> <li>• Laboratory facilities</li> </ul>
4.14.6	<p>The requirements for the provision and erection of sign boards are:</p> <p>.....</p> <p>.....</p>
4.17.1	<p>The requirements for the termination, diversion or maintenance of existing services are:</p> <p>.....</p> <p>.....</p>
4.17.3	<p>Services that are known to exist on the site are shown on the drawings</p>
4.17.4	<p>The requirements for the detection apparatus are:</p> <p>.....</p> <p>.....</p> <p>.....</p>
4.18	<p>The additional health and safety requirements are:</p> <p>.....</p> <p>.....</p>
4.22	<p>The works to be undertaken by nominated and selected subcontractors comprise:</p> <p>.....</p> <p>.....</p>

SANS 1921-1: General engineering and construction works	
Clause No	Specification data
<b>Variations:</b>	
4.1.10	Degree of accuracy II shall be applicable unless stated otherwise in the drawings or specification.
4.2.4	The time frame for acceptance is 10 working days

**Additional clauses:**

4.1.1 p)	<p>Add this new clause:</p> <p>“Appoint a Community liaison officer (CLO) to assist with the community liaison with the beneficiary community.”</p>
4.23	<p>Add this new clause:</p> <p>“4.23 Community participation”</p> <p>Community participation consists of engagement of Project Steering Committees (PSC).</p> <p>A PSC will be established for the project, by the Ward Councillor.</p> <p>The functions of the PSC will be to:</p> <ul style="list-style-type: none"> <li>• Assist in monitoring the project.</li> <li>• Ensure that the community provide assistance to the contractor to ensure that he can execute the contract in accordance with the specifications and within time.</li> <li>• Encourage the community to participate in the Labour Intensive construction.</li> <li>• Identify skills, skilled personnel and suppliers in the towns.</li> </ul> <p>The PSC will not have the power to:</p> <ul style="list-style-type: none"> <li>• Give any instructions to the contractor, except through the engineer.</li> <li>• Become involved in the daily operations of the contractor or interfere with the contract works.</li> </ul> <p>A monthly meeting will be held with the PSC to discuss relevant matters. The site agent and resident engineer will attend the meetings. The contractor will have to report on progress, deviations from the programme, financial matters community related aspects, general problems and co-operation at the meeting. The PSC members will not receive any remuneration for attending, and they must provide their own transport.”</p>

SANS 1921-2: Accommodation of traffic on public roads occupied by the contractor	
Clause No	Specification data
4.3.2	The contractor shall design all the temporary culverts
4.6.1	The length of half-width roads under construction shall not exceed 4m km
4.6.3	The length of road shall be limited to 4 km
4.10.1	<p>The contractor shall provide the following traffic control facilities:</p> <ul style="list-style-type: none"> <li>• Traffic-control devices such as flagmen, STOP and GO signs, traffic signals.</li> <li>• Statuary permanent and temporary road signs and barricades.</li> <li>• Channelization devices and barricades including delineators, cones, road studs, road marking, etc.</li> <li>• Barriers such as New Jersey, plastic movable barriers, etc.</li> <li>• Warning Devices on plant and construction vehicles.</li> <li>• Road markings.</li> </ul>
<b>Variations:</b>	
<b>Additional clauses:</b>	
4.1.4	<p>Add this new clause:</p> <p>“Failure to maintain road signs, warning signs, etc, in a good condition shall constitute ample reason for the engineer to bring the works to a stop until the road signs, etc, have been repaired to his satisfaction.</p> <p>The contractor may not commence constructional activities 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 Volume 2 Chapter 13.</p> <p>The contractor shall submit proposals in connection with directional signs to the engineer for approval prior to construction.”</p>

SANS 1921-4: Third –party management support in works contracts	
Clause No	Specification Data
5.1.1(b)	The construction Manager is required to arrange for the supply of mechanical equipment and the supply and delivery of materials to site
5.1.1(i)	<p>The construction manager is required to provide the following site facilities:</p> <p>.....</p> <p>.....</p> <p>.....</p>
5.1.1(b)	<p>The employer's policy pertaining to conditions of employment is as follows:</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p>
5.1.1(h)	<p>The following name boards are required:</p> <p>.....</p> <p>.....</p> <p>.....</p>
<b>Variations:</b>	
<b>Additional clauses:</b>	

SANS 1921-5: Earthworks activities that are to be performed by hand												
Clause No	Specification Data											
5.1	The depth of the trenches to be excavated by hand is 1,5m.											
<b>Variations:</b>	State variations, if any, for example specific compaction requirements											
<b>Additional clauses</b>												
SANS 1921-6: HIV / AIDS awareness												
Clause No	Specification Data											
4.2.1(a)	<p>A qualified service provider is a service provider that is accredited by The NMBM Health and Social Development and appears on the list of recognized service providers Of the NMBM Health and Social Development.</p> <p>The contact particulars of qualified service providers are as follows:</p> <table border="1"> <tr> <td>Name</td> <td>Tel</td> <td>Fax</td> <td>e-mail</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> </tr> </table>				Name	Tel	Fax	e-mail				
Name	Tel	Fax	e-mail									
4.2.1 (a)	<p>Apart for the initial programme, the HIV / AIDS awareness programme is to be repeated at 4-month intervals throughout the duration of the contract</p>											
<b>Variations:</b>												
<b>Additional clauses:</b>												

## **C3.5.2 MANAGEMENT OF THE WORKS**

### **C3.5.2.1 Applicable SANS Standards**

The following SANS Standardized Specifications for Civil Engineering Construction Contracts are applicable:

- i. SANS 1200 A : General
- ii. SANS 1200 AB : Engineer's Office

The provisions of SANS 1200 A and SANS 1200 AB take precedent over the provision of any part of SANS 2001 that is applicable to the Contract. The variations and additions to these specifications are described in Section C3.4.

Further to the above, the SANS 1200 Standardized specifications listed in C3.4 are applicable.

### **C3.5.2.2 Particular or Generic Specifications**

Refer to Clause C3.4.1

## **C3.5.3 Planning, Programming and Cash Flow**

### **C3.5.3.1 Programming and Cash Flow**

Clause 5.6 of the General Conditions of Contract (GCC 2010) requires the Contractor to submit a programme for the execution of the works. The programme shall be presented in the form of a Gantt Chart.

In addition to the requirements of Clause 5.6, the format and information shown shall comply with the following:

- The various stages of work planned to be completed per month in sufficient detail to be able to assess construction progress,
- Sequence of work,
- Resources intended to be utilized,
- The interdependence between resources and sequence of work,
- Clear indication of the critical path activities and their dependencies,
- Key dates in respect of information to be provided by the Employers Agent and/or others,
- Labour resources schedule which must distinguish between the Contractors permanent labour and the temporary employed labour from the local ward,
- The lead time for training of labour from the local ward.

If any change to the critical path occurs, the Contractor shall as soon as is practicable notify the Employers Agent in writing.

When drawing up the programme the Contractor shall, among other issues, take into consideration and make allowance for:

- Expected weather conditions and their effects,
- Known physical conditions or artificial obstructions,
- Searching for, dealing with and carrying out alterations to the existing services,
- The procurement process of EME's in accordance with section C3.3,
- The provision and implementation of the Environmental Management Plan (EMP) in terms of the Environmental Management Specification and Environmental Impact Assessment (EIA) conditions,
- The restrictions on the length of trench open at any one time as specified,
- The accommodation and safeguarding of public access and traffic,

- The lead time required for compliance with the Site Specific Health and Safety Specification and Site Specific Baseline Risk Assessment (annexure C & D respectively),
- Provision and implementation of the Health and Safety Plan in terms of the 2014 Construction regulations and the Occupational Health and Safety Act (1993)
- Election day,
- Official builders break,
- Special non-working days, and
- Non-working days.

Failure to produce a detailed programme may prejudice the Contractor in any claim for an extension of time.

Failure to comply with these requirements will entitle the Employers Agent to use a programme based on his own assumptions for the purpose of evaluating claims for extension of time or additional payments.

#### C3.5.3.2 Employers Agent Inspection and Approval of the Works

The Contractor shall allow reasonable time in his programme for the Employers Agent to carry out examination of the work before covering up. Requests for inspections should be made in writing to the Employers Agent at least 24 hours before such inspections are required. Requests for inspections should coincide with the Employers Agent Representative daily site visit.

If the Employers Agent attends with the purpose of examining any part or materials of the works at the date and time agreed on with the Contractor and it is found that the works or materials are not ready for inspection, the Contractor shall be responsible for the cost of that visit by the Engineer.

The Employers Agent Representative will visit the site approximately daily for the purpose of supervision of the Contract and inspection and approval of completed work. The Contractor shall therefore arrange his working programme in such a way that all work is inspected and approved at the required time. Under no circumstances shall he proceed with any activity that covers up previous work before the previous work has been approved in writing (e.g. no trench shall be backfilled until the laid pipes and bedding have been inspected and approved).

#### C3.5.2.4.1 Review of Progress

The Contractor shall review his progress each month and should progress lag behind the latest accepted programme by more than two (2) weeks, he shall submit a revised programme and method statement of how he proposes making up lost time. If, in the opinion of the Employers Agent, such revised programme will not make up lost time, the Employers Agent shall have the right to request the Contractor to reorganize his work in a manner which will ensure an acceptable programme. Claims for additional payments to meet any cost incurred due to such reorganization will not be accepted.

The Contractor is required together with his monthly updated programme to submit a cash flow indicating the anticipated total and monthly expenditure value for the contract at the monthly site/progress meetings.

With reference to paragraph 56 of the Contract Data the programme and cash flow will be reviewed at the monthly site meetings at which time the contractor shall provide sufficient detail that will allow a comparison of completed work per activity against the original approved programme. The Contractor shall indicate what resources and programme changes he intends to implement in order to remedy any activity that has fallen behind. The Employers Agent may demand from the contractor a major revision of the programme. Such a revision shall be submitted for approval within fourteen (14) days of the demand.

#### **C3.5.4 SEQUENCE OF THE WORKS**

The Contractor may elect to undertake the work in any sequence he chooses, unless prior arrangements are made between the Employer, Employer's Agent and the Contractor.

The Contractor shall submit to the Employers Agent for approval at the start of the contract a detailed plan of action that set out the sequence of construction of the works. The approved plan of action shall be amended in consultation with the Employers Agent.

#### **C3.5.5 SOFTWARE APPLICATION FOR PROGRAMMING**

Microsoft Project format.

#### **C3.5.6 METHODS AND PROCEDURES**

##### **C3.5.6.1 Safeguarding & protection of excavations**

Portions of the work will be carried out within residential areas. Excavations will be barricaded off, at all times, with clearly visible protection measures. Where deep excavations exist, the barricading shall be adequate to prevent accidental entry.

##### **C3.5.6.3 Disposal of excess material**

Two designated spoil sites may be used for this Contract, namely Arlington and Koedoeskloof. Disposal slips as proof of disposal will be provided to the Employers Agent as part of Environmental Management, monitoring and compliance.

##### **C3.5.6.4 Giving notice of work to be covered up**

The Contractor shall give the Employers Agent reasonable time to accommodate examinations in his programme, in which case times for inspection can be agreed on. Requests for examination of work shall be made in the site request book at least 24 hours before the examination is required.

##### **C3.5.6.5 Cost of test specimens and tests**

The Contractor must make allowance in his Tender for all such services and tests required from him. It is the duty of the Contractor to, at his own cost and by means of the necessary tests, prove to the Employers Agent or his representative that the works and compaction where prescribed, comply with the specification.

##### **C3.5.6.6 Progress Photographs**

The Contractor shall set up a system of taking digital photographs on site on a weekly basis to monitor the progress of works. This digital photography shall be labelled with the date, location and description of the photograph and a copy handed to the Employers Agent on a CD or other storage medium on a weekly basis for safe storage. The format shall be JPG, BMP or any other common format.

##### **C3.5.6.7 Materials handling, use and storage**

All materials shall be stored in the designated Contractor's camp area or as indicated by the Employers Agent. Any material to be stored and handled must be done in such a way as not to endanger any person on site or cause damage to the environment. The Contractor shall also ensure that all suppliers or delivery vehicles abide by all restrictions and procedures (speed limits, dust control, "no-go areas" etc.).

#### **C3.5.7 QUALITY PLANS AND CONTROL**

Quality Control Plans, methods and testing shall be as specified in the contract.

#### **C3.5.8 Environmental**

The Contractor shall prior to the commencement of any construction prepare and submit an Environmental Management Plan (EMP), for approval by the Employers Agent.



The EMP shall clearly demonstrate how the Contractor intends mitigating damage to the environment, as a result of their construction activities.

The Contractor shall further appoint a competent Environmental Control Officer (ECO), who shall inspect all construction related activities, who will be responsible for monitoring the Contractor's operations on site, as well as compliance with regard to the EMP and associated legislation and who shall report on non-compliance items.

***No additional payment will be made in this regard.***

Further, the ECO will submit his/her Environmental Audits at monthly site meetings, for discussion by all role players.

The Contractor will be liable to pay the fines as indicated in the Contract Data paragraph 35 and 51 for recurring non-compliances.

a) Sand and dust control

The Contractor shall, for the duration of the contract, take appropriate measures to control the dust and soil movement which may arise due to his operations.

b) Environmental Management

The Contractor will be required to compile a comprehensive EMP, which should address the management and monitoring of environmental impacts related to this contract.

The EMP should therefore identify potential environmental impacts and should further demonstrate how they would be mitigated and controlled.

c) Environmental Impact

The Contractor shall, for the duration of the Contract, ensure that good housekeeping practices are adhered to by all his staff and that of his subcontractors (including EME's).

d) Environmental Methods and Procedures

The following together with the Construction Environmental Management Programme, shall be applied with regard to the operation and maintenance of the site:

- The site shall at all times be kept in a neat and tidy condition. Papers and packaging shall be binned and removed from site and waste stockpiles shall be properly demarcated and the water removed at regular intervals and disposed of at a registered waste disposal site.
- Natural vegetation shall not be damaged unnecessarily and the working areas of the site be kept to the minimum reasonable possible for construction. An environmental awareness training programme for the construction staff should be implemented by the Contractor/Subcontractor(s) and all workers made aware of the recommended mitigation measures to be implemented.
- No wild animal (birds, snakes, lizards, game etc.) domestic stock or indigenous plants are to be disturbed unnecessarily in any way by the construction activities or by the construction staff.
- All topsoil (containing indigenous plant seeds, rootstock etc.) removed – that may be required in future rehabilitation – should be carefully stockpiled for later rehabilitation.
- Measures need to be taken to ensure that contamination from the work camp and laydown site does not pollute adjacent areas. This should include the diversion of natural run-off away from the works and the containment thereof in drainage retention areas, where applicable.
- Water from dewatering operations shall be disposed of so as not to return to the working area nor the cause to damage or erosion to surrounding areas.
- Dust from stockpiles and access roads shall be controlled by watering.

- Precautions need to be taken against oil spillage from heavy equipment through the use of sand or sawdust drip trays. All material (including soil) contaminated with hydrocarbons should be disposed of as hazardous waste at a registered waste disposal site.
- Any object of historical interest may be uncovered in the course of the works shall immediately be protected and reported to the Employers Agent for further action. There is a legal requirement to report any archaeological site of cultural significance to the National Monuments Council, according to the National Heritage Act (Act 25 of 1999).
- Access to the site shall be given to all sub-contractors and other contractors who may be appointed from time to time to allow them to complete their portion of the works.
- The contractor shall check and supervise his own work and the work of his subcontractors to ensure that all work is carried out to the specified time schedule, safety and quality standards.
- The contractor is responsible for the care, safekeeping and security of the works including all plant and materials whether in store, on site or already installed.
- Site records – the Contractor shall maintain a diary reporting the daily progress referencing the area of work, any problems experienced, weather, plant complement and labour complement.
- Final audit: On completion of the work, but before the construction site is handed back to the Employer, a thorough environmental inspection or audit impacted by the construction activities shall be carried out and any 'problematic' or damaged areas shall be made good or rehabilitated to the satisfaction of all parties.

e) Fires and Burning Vegetation

Under no circumstances whatsoever may fires be lit at the site of the works.

f) Preservation of Flora and Fauna and Soil Conservation

The Contractor shall:

- a. Take all precautions to prevent:
  - i. any damage to trees, shrubs and the surrounding natural environment,
  - ii. fires,
  - iii. loss or injury to domestic or wild animals from any lands used or occupied by the Contractor
- b. Refrain from destroying, removing or clearing tree's, timber and scrub to any extent greater than is absolutely necessary for the execution of the contract
- c. Ensure that no vegetation, trees or shrubs outside the site boundaries are disturbed, damaged or destroyed. A penalty of R1 000.00 per incident will be charged to the Contractor. Refer to paragraph 54 of the Contract Data.
- d. Take care to cause the minimum disturbance to fauna and flora
- e. Take measures as to ensure that his employees are aware of and abide by all laws and restrictions governing the hunting, disturbing capturing or destroying of animals and birds in the vicinity of the camp and the works or the taking of fish from water, and
- f. Prohibit all firearms from the site and temporary camps.

g) Protection of Trees, Shrubs and Surrounding Environment

The Contractor shall ensure that no trees, shrubs or surrounding natural environment outside the site boundaries are disturbed, damaged or destroyed. A penalty of R1 000.00 per tree or shrub damaged or destroyed or for damage to the surrounding environment will be charged to the Contractor. The Employers Agent shall have the right to permanently exclude any person from the site who causes damage to the natural environment.

h) Prevention of Poaching

The Contractor shall ensure that none of his employees partake in any poaching activities of any nature during the duration of the contract.

Any person caught poaching shall be banned from the site of the works and shall be prosecuted under the relevant laws.

The Contractor shall be liable for a fine of R20 000.00 (refer to paragraph 53 of the Contract data) for every poaching incident committed by any of his employees (permanent or temporary employed), whether the employee is prosecuted or not. Repeated incidents may be considered as cause for cancellation of the contract in terms of clause 9.2.1.3.6 of the GCC 2010.

#### **C3.5.9 ACCOMMODATION OF TRAFFIC ON PUBLIC ROADS OCCUPIED BY THE CONTRACTOR**

The operation of construction vehicles on existing roads shall be limited to traffic with an axle load not exceeding that allowed by the Road Traffic Ordinance of the authority concerned, or any amendment thereof.

If the Contractor use existing roads for the hauling of materials to or from site, he shall be held responsible to clear any spillage caused by his activities on or near the roads by whatever means necessary and immediately. No additional payment will be made for the clearance of spillage and all other relevant costs.

Where work is to be executed close to existing residential properties, the Contractor shall ensure that at all times pedestrian and vehicle access are provided for house owners to their properties. Where crossing of existing driveways are to be done, the Contractor must liaise with the relevant property owners regarding the time and period when such access will not be available. However, access shall be made available between 17:00 and 07:00 on weekdays and on Saturdays and Sundays.

#### **C3.5.10 TESTING, COMPLETION, COMMISSIONING, AND CORRECTION OF DEFECTS**

Practical completion of the works will only be considered once the connections to the existing mains are completed and all lines and manhole structures are completed, tested and approved.

#### **C3.5.11 FORMAT OF COMMUNICATION**

Throughout the construction period, the Contractor shall supply and maintain the following documentation that shall be kept on site, accessible to both the Contractor and the Employers Agent or representative at all times:

a) Site Request / Instruction book:

For the Contractor to provide the Employers Agent or Representative with information required, for giving notification in writing of inspections, drawings, etc., required by the Contractor, and for use by the Employers Agent or Representative for the purpose of writing day-to-day instructions or confirming verbal information or instructions given to the Contractor.

b) Health and Safety File

Containing the site and safety hierarchy, contact details, safety plan, audits, safety equipment, safety training, injuries log, inspections and all other relevant safety data

c) Quality Control File

Containing Quality Assurance and Quality Control Forms to be operated and maintained by the Contractor.

d) Measurement File

Containing records of work measurement and calculations

e) Daily Register

Listing labour and plant status. A complete record of staff employed on the Contract is to be kept on site for use by the Employers Agent.

f) Daily Contract Diary

For recording the work carried out on site each day – shall reference the specific area of work and shall be signed by the Construction Manager and the Employers Agents Representative.

g) Monthly Labour Return Schedule

h) One full set of contract drawings and contract documents.

i) Construction Programme

The site diary shall record the following:

- Progress of works
- Contractors and subcontractors personnel on site
- Delays, possible delays and inclement weather
- Delivery of materials to site
- Plant and equipment on site

All communications regarding the contract shall be channelled through the Employers Agent and/or his authorised representative.

A site book in triplicate will be provided by the Contractor in which relevant matters shall be recorded and signed by the Employers Agent and the Construction Manager.

All communication shall be noted and recorded in the minutes of the monthly progress meetings.

**C3.5.12 WEATHER CONDITIONS**

**C3.5.12.1 Recording of weather**

The Contractor shall provide and erect a rain gauge on site. All rainfall and other adverse weather conditions affecting the contractual time for completion in terms of Clause 5.5 of GCC 2010 shall be recorded in the site diary.

The site diary shall be handed to the Employers Agent Representative for his signature no later than 7 days after rain that is considered to justify an extension of time that may occur.

**C3.5.12.2 Extension of Time Resulting from Abnormal Rainfall**

Extension of time will not be considered for normal rainfall but only abnormal rainfall or saturated conditions and will be calculated in accordance with the following method:

- a) The Contractor shall, in his programme, allow for the anticipated number of working days on which work could be delayed- as given in the Contract Data.
- b) Extension of time will be calculated for each calendar month or part thereof over the full period for the completion of the Work, plus any approved extension thereof, as follows:
  - i) A delay caused by abnormal rainfall will only be accepted for extension of time if, in the opinion of the Employers Agent, it delays an item or items which lie on the critical path determined by the Contractor's programme. Only delays on normal working days will be considered.

- ii) Abnormal rainfall will be considered to be days, as approved, on which rain delayed operations, less the anticipated number of days given in the Schedule as found in the Contract Data..
- iii) The net extension of time determined for each month, which may be negative, shall accumulate algebraically to determine the net number of days for extension of time due to abnormal rainfall, but a negative total at the end of the construction period will not be taken into account.
- iv) Where a portion of a month is involved, a pro rata number of days shall be calculated.

#### **C3.5.13 KEY PERSONNEL AND SUPERVISION**

A schedule of key personnel to be used on site, including contact particulars, is to be provided to the Employers Agent before commencement of works.

The Key Personnel presented as part of the tender submission in returnable schedule T2.2.8 : Organogram and T2.2.9 : Key Personnel as listed in paragraph 41s) of the Tender Data shall apply. If the personnel indicated are no longer available, personnel with similar or better qualifications and experience shall be presented to the Employers Agent for approval.

#### **C3.5.14 NORMAL WORKING HOURS**

Normal working hours shall be those as stated in the Government Gazette for Civil Engineering and Roadmaking Industries as applicable to a 5 (five) day week, Monday's to Friday's.

#### **C3.5.15 MANAGEMENT MEETING**

The Employers Agent, Contractors designated representative(s), Employer and other Agents/Consultants/Subcontractors as required shall hold meetings related to the progress of the works, technical issues, quality, health and safety and environmental compliance and subcontractor co-ordination matters at regular intervals not exceeding 4 weeks, or at such other times may be necessary. The representatives of the Employers Agent, Contractor and Employer and their delegated authority will be confirmed at the Inaugural Site meeting.

The Contractor shall attend all progress/site meetings and ensure that all persons under his jurisdiction are notified timeously of all progress/site meetings should their attendance be required. All persons attending progress/site meetings are to have the necessary delegated authority in respect of aspects such as planning, change managements, health and safety and environmental.

#### **C3.5.16 ELECTRONIC PAYMENTS**

The Contractor will be responsible for supplying correct bank details to the employer for electronic payments and the Employer will not be held responsible for any incorrect bank details supplied by the Contractor.

The Contractors tax invoice shall contain the following information as a minimum:

- Contract number and description
- Date of invoice
- Invoice number
- Clearly stipulate the words "Tax Invoice"
- Be addressed to the MBDA
- Contain the details of the MBDA
- Contain the banking details, Vat number
- Contain the logo of the contractor or contractors in the case of a joint venture

**C3.5.17 BONDS AND GUARANTEES**

The Contractor shall deliver to the Employer the original fixed performance guarantee before commencement of works. The guarantee shall be held by the Employer for safekeeping until completion of the work.

No bonds are accepted.

**C3.5.18 Payment Certificates**

Payment certificates are to be agreed upon by the Construction Manager and Employers Agent Representative and signed by them and submitted to the Employers Agent by the 25th day of each month.

Payment certificates shall be submitted in the form of the Bill of Quantities. Columns shall be provided showing the previous quantity, current quantity and total quantity claimed under each item. Calculations to substantiate the quantities claimed must be submitted with each monthly claim. A declaration of ownership of unused materials must be submitted together with any claim made for payment of unused materials on site. No payment for materials on site will be made without such a declaration. A pro forma declaration of ownership is included in this document.

Payment certificates are to be agreed upon by the Construction Manager and Employers Agent Representative. Once agreed, the Contractor is to submit a signed payment certificate to the Employers Agent for certification including a signed tax invoice addressed to the MBDA.

**C3.5.19 INSURANCE PROVIDED BY THE EMPLOYER**

Copies of the insurance may be obtained from the Employer, if required. Refer to the Contract Data for full details of the insurance provided by the Employer.

**C3.5.20 NEATNESS OF THE SITE**

Progressive and systematic finishing and tidying will form part of this contract. Spoil, rubble, materials, equipment or unfinished operations shall not be allowed to accumulate unnecessarily and in the event of this happening, the Employers Agent shall have the right to withhold payment for as long as the condition prevails in respect of the relevant works in the area(s) concerned.

The general neatness and tidiness of the site is of particular concern. The Contractor shall therefore, on a day-to-day basis, keep the Works in a condition acceptable to the Employers Agent.

**C3.5.21 MAINTENANCE OF ACCESS AND STREETS**

The operation of construction vehicles on existing roads or streets shall be limited to traffic with an axle load not exceeding that allowed by the Road Traffic Ordinance of the authority concerned, or any amendment thereof.

All access roads used by the Contractor shall be maintained for the duration of the contract and shall be rehabilitated to their original condition on completion of the contract. The Contractor must note that no additional payment will be made for construction, maintenance and rehabilitation of any access roads to the site.

**C3.5.22 PROTECTING THE SITE**

The Contractor shall be solely responsible for the protection of the Site against all damage to property, services, terrain, trees etc. If in the normal execution of this Contract, disturbance to the Site of the Works is necessary, the Contractor shall obtain the prior permission of the Employers Agent. After completion of this work, the Contractor shall reinstate the area concerned to its original condition at his own cost or as covered under the rates in the Bill of Quantities. The Employers Agent ruling of what was the original condition of the Site or part thereof shall be final.

If the Contractor fails to reinstate the Site, the Employer shall do the reinstatement and the Employers Agent shall establish the extent of the work as well as its costs. The Employers Agent ruling shall be final and payment for the work will be deducted from the Contractor's monthly certificate.

The Contractor shall ensure that his actions do not cause any nuisance to the public. Should spillages occur, the Contractor must adequately disinfect the work site, including the container area.

**C3.5.23 Protection of the Works against Flooding**

The Contractor shall provide sumps, pumps, furrows, berms and/or coffer dams to divert water flow away from construction activities; and any other temporary measure/works as may be necessary to minimise damage, inconvenience or interference, for 24 hours a day 7 days a week throughout the period of construction, to adequately protect the works from flooding and damage.

The Contractors programme must include and item and information regarding the dealing with water.

**C3.5.24 Landowners**

The Contractor is to ensure that all landowners are notified 1 month prior to construction commencing in their properties. The Contractor shall submit copies of the notification to the Employers Agent.

The Contractor is to minimise disruption and ensure access and security for the landowners are maintained at all times. The following measures are to be adhered to for the duration of the contract:

- The construction of activities should proceed as discussed with the landowner and Employers Representative
- Landowner to have access to his property at all times
- Temporary fences to be installed as required by the Contractor without limiting access to the landowner
- Tidying up, removing temporary fencing, reinstating existing fencing and opening the existing access to be performed before completion of the contract

**C3.5.25 Forms for contract administration**

Pro forma approval forms to be used on this contract shall be provided by the Employers Agent at the inaugural meeting.

Forms for reporting on employment of local labour (EPWP) are attached as annexure E to this document. These reports shall be submitted monthly to the Employers Agent in accordance with the stipulated requirements.

**C3.5.26 Proof of Compliance with the Law**

Refer to clause 4.3.1 (paragraph 13) of the Contract Data.

<b>C3.6: PROJECT RELEVANT HEALTH AND SAFETY SPECIFICATION</b>
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