



LIMPOPO
PROVINCIAL GOVERNMENT
REPUBLIC OF SOUTH AFRICA

DEPARTMENT OF
**PUBLIC WORKS, ROADS
AND INFRASTRUCTURE**

PUBLIC WORKS, ROADS AND INFRASTRUCTURE

Tender No LDPWRI-ROADS/18010

3YEARS HOUSEHOLD BASED ROUTINE ROAD MAINTENANCE PROJECT

AT

EPHRAIM MOGALE LOCAL MUNICIPALITY IN SEKHUKHUNE DISTRICT

PROCUREMENT DOCUMENT

(Based on General Conditions of Contract for Construction Works (2015) 3rd Edition published by the South African Institution of Civil Engineering (GCC))

AUGUST 2018

Issued by:

**THE HEAD OF DEPARTMENT
DEPARTMENT OF PUBLIC WORKS, ROADS AND
INFRASTRUCTURE
PRIVATE BAG X9490
POLOKWANE
0700**



Name of tenderer:

CIDB CRS numbers: /



PUBLIC WORKS, ROADS AND INFRASTRUCTURE

LDPWRI-ROADS/18010

**HOUSEHOLD BASED ROUTINE ROAD MAINTENANCE PROJECT AT
EPHRAIM MOGALE LOCAL MUNICIPALITY**

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PUBLIC WORKS, ROADS AND INFRASTRUCTURE

LDPWRI-ROADS/18010

**HOUSEHOLD BASED ROUTINE ROAD MAINTENANCE PROJECT AT
EPHRAIM MOGALE LOCAL MUNICIPALITY**

T1.1 Tender Notice and Invitation to Tender

Tenders are hereby invited from Contractors registered with the Construction Industry Development Board (CIDB) having a minimum CIDB grading of **7CE** or higher for the **3YEAR HOUSEHOLD ROUTINE ROAD MAINTENANCE PROJECT IN EPHRAIM MOGALE LOCAL MUNICIPALITY**.

Eligible contractors must have four (4) supervisors (Site Agent) with NQF level 4 in Supervision of Civil Engineering/Construction Processes and one (1) Contract Manager with NQF level 5 in the Management of Civil Engineering/Construction Processes issued only by CETA.

Documents shall be downloaded from the Employer's website <https://www.dpw.limpopo.gov.za> from the date of the advert

Queries relating to the issue of these documents may be addressed in writing to Mr.Kekaewi, Tel No.: 015 284 7452, e-mail: shitlhangup@dpw.limpopo.gov.za.

A compulsory clarification meeting with representatives of the Employer will take place at the Department of Public Works, Roads and Infrastructure, Lebowakgomo Government Complex, Education Hall on date indicated on the Tender Bulletin starting at **11h00** hrs.

The closing time for receipt of tenders is **11h00** hrs on date indicated on the Tender Bulletin. Telegraphic, telephonic, telex, facsimile, e-mail and late tenders will not be accepted.

Tenders may only be submitted on the tender documentation that is issued / downloaded. **No ring binding is allowed, only stapling and or tape binding is allowed.**

Requirements for sealing, addressing, delivery, opening and assessment of tenders are stated in the Tender Data.



PUBLIC WORKS, ROADS AND INFRASTRUCTURE

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3YEAR HOUSEHOLD BASED ROUTINE ROAD MAINTENANCE PROJECT AT EPHRAIM MOGALE LOCAL MUNICIPALITY

T1.2 Tender Data

The conditions of tender are those contained in the latest edition of SANS 10845-3, *Construction Procurement – Part 3: Standard conditions of tender*.

SANS 10845-3 makes several references to the Tender Data for details that apply specifically to this tender. The Tender Data shall have precedence in the interpretation of any ambiguity or inconsistency between it and the provisions of SANS 10845-3.

Each item of data given below is cross-referenced to the clause in SANS 10845-3 to which it mainly applies.

Clause number	Tender Data
3.1	The Employer is Department of Public Works, Roads & Infrastructure
3.2	<p>The tender documents issued by the employer comprise the following documents:</p> <p>THE TENDER</p> <p>Part T1: Tendering procedures</p> <p>T1.1 - Tender notice and invitation to tender</p> <p>T1.2 - Tender data</p> <p>Part T2: Returnable documents</p> <p>T2.1 - List of returnable documents</p> <p>T2.2 - Returnable schedules</p> <p>THE CONTRACT</p> <p>Part C1: Agreements and Contract data</p> <p>C1.1 - Form of offer and acceptance</p> <p>C1.2 - Contract data</p> <p>C1.3 - Performance Bond</p> <p>Part C2: Pricing data</p> <p>C2.1 - Pricing assumptions</p> <p>C2.2 - Bill of Quantities</p> <p>Part C3: Scope of work</p> <p>C3 - Scope of work</p> <p>Part C4: Site information</p> <p>C4 - Site information</p>

3.2	<p>The tender documents issued by the employer comprise:</p> <p>Volume 1: Tendering procedures T1.1 Tender notice and invitation to tender T1.2 Tender data</p> <p>Volume 2: Returnable documents T2.1 List of returnable documents T2.2 Returnable schedules</p> <p>C1.1 Form of offer and acceptance C1.2 Contract data (part 2) C2.2 Activity schedules / Bills of Quantities</p> <p>Volume 3: The contract Part C1: Agreements and contract data C1.2 Contract data (part 1) C1.3 Form of Guarantee</p> <p>Part C2: Pricing data C2.1 Pricing assumptions</p> <p>Part C3: Scope of work C3 Scope of work</p> <p>Part C4: Site information C4 Site information</p>
3.2	The tender documents issued by the employer comprise the documents listed on the contents page
3.4	<p>The employer's representative :</p> <p>Name: Employer's representative of the Department Address: 43 Church Street Tel: 015 284 7000 Fax: 015 284 7030.</p>
3.4	The language for communications is English
4.1	<p>Only those tenderers who satisfy the following eligibility criteria and who provide the required evidence in their tender submissions are eligible to submit tenders and have their tenders evaluated: Proposed key staff: four (4) supervisors (Site Agent) with NQF level 4 in Supervision of Civil Engineering/Construction Processes issued only by CETA and one (1) Contract Manager with NQF level 5 in the Management of Civil Engineering/Construction Processes issued only by CETA. At least One (1) Occupational Health and Safety Officer with a National Diploma in Safety Management or Environmental Health or a recognised safety certification (minimum of two weeks training) registered with an accredited and recognised professional body in terms of Construction Regulations 2014.</p>
4.1	<p>Only those tenderers who are registered with the CIDB, or are capable of being so prior to the evaluation of submissions, in a contractor grading designation equal to or higher than a contractor grading designation determined in accordance with the sum tendered, or a value determined in accordance with Regulation 25 (1B) or 25(7A) of the Construction Industry Development Regulations, for a 7CE or higher class of construction work, are eligible to have their tenders evaluated.</p> <p>Joint ventures are eligible to submit tenders provided that:</p> <ol style="list-style-type: none"> 1. every member of the joint venture is registered with the CIDB; 2. the lead partner has a contractor grading designation in the CE class of construction work; and 3. the combined contractor grading designation calculated in accordance with the Construction Industry Development Regulations is equal to or higher than a contractor grading designation determined in accordance with the sum tendered for a 7CE or higher class of construction work or a value determined in accordance with Regulation 25 (1B) or 25(7A) of the Construction Industry Development Regulations.

4.1	<p>The following tenderers who are registered with the CIDB, or are capable of being so registered prior to the evaluation of submissions, are eligible to have their tenders evaluated:</p> <p>a) contractors who have a contractor grading designation equal to or higher than a contractor grading designation determined in accordance with the sum tendered, or a value determined in accordance with Regulation 25 (1B) of 25(7A) of the Construction Industry Development Regulations, for a CE class of construction work; and</p> <p>b) contractors registered as potentially emerging enterprises with the CIDB who are registered in one contractor grading designation lower than that required in terms of a) above and who satisfy the following criteria:</p> <ol style="list-style-type: none"> 1) the employer is satisfied that such a contractor has the potential to develop and qualify to be registered in that higher grade as determined in accordance with the provisions of the <i>CIDB Specification for Social and Economic Deliverables in Construction Works Contracts</i>; and 2) the employer agrees to provide the financial, management or other support that is considered appropriate to enable the contractor to successfully execute that contract. <p>Joint ventures are eligible to submit tenders provided that:</p> <ol style="list-style-type: none"> 1. every member of the joint venture is registered with the CIDB; 2. the lead partner has a contractor grading designation in the CE class of construction work; and 3. the combined contractor grading designation calculated in accordance with the Construction Industry Development Regulations is equal to or higher than a contractor grading designation determined in accordance with the sum tendered for a CE class of construction work or a value determined in accordance with Regulation 25 (1B) of 25(7A) of the Construction Industry Development Regulations
4.7	<p>The arrangements for a compulsory clarification meeting are as stated in the Tender Notice and Invitation to Tender.</p> <p>Tenderers must sign the attendance list in the name of the tendering entity. Addenda will be issued to and tenders will be received only from those tendering entities appearing on the attendance list.</p>
4.10	Tenderers are required to state the rates and currencies in Rands only
4.12	Main tender offers are not required to be submitted together with alternative tenders.
4.12	No alternative tender offers will be considered.
4.13.1	Parts of each tender offer communicated on paper shall be submitted as an original.
4.13.5 4.15	<p>The employer's details and address for delivery of tender offers and identification details that are to be shown on each tender offer package are:</p> <p>Location of tender box: Department of Public Works, Physical address: Corner Blaauwberg and River Street, Ladanna Identification details: Tender No. LDPWRI-ROADS/18010 : 3YEAR HOUSEHOLD ROUTINE ROAD MAINTENANCE PROJECT AT EPHRAIM MOGALE LOCAL MUNICIPALITY</p>
4.13.4	<p>The tenderer is required to submit with his tender the following certificates:</p> <ol style="list-style-type: none"> 1) a copy of Tax Clearance Certificate issued by the South African Revenue Services;
4.13.5	The "ORIGINAL" of all attachments are to be submitted as separate packages.
4.13.6	Telephonic, telegraphic, telex, facsimile or e-mailed tender offers will not be accepted.
4.15	The closing time for submission of tender offers is as stated in the Tender Notice and Invitation to Tender.
4.16	The tender offer validity period is 12 weeks.
5.1	The Employer will respond to requests for clarification received up to 7 working days before the tender closing time.
5.2	The employer shall issue addenda until 3 working days before tender closing time.

5.4	Tenders will be opened and read out immediately after the closing time for tenders at 11h00 hrs		
5.11.3	The procedure for the evaluation of responsive tenders is Method 3 (Financial offer and preference).		
5.11.9	The quality criteria and maximum score in respect of each of the criteria are as follows:		
	Eligibility criteria	Weight	Sub criteria
	Company/ Entity's experience in Roads Construction or Maintenance Projects	20	Score will be based on successfully executed and completed road projects in the last six years a) 1 to 3 Projects = 1 b) 4 to 6 Projects = 3 c) 7+ Projects = 5
	Technical qualification of all four (4) supervisors (see page T.46)	15	a) N3 Certificate in the Built Environment = 1 b) N5 Certificate in the Built Environment = 3 c) N6 or National Diploma in Civil Engineering = 5 NB: Rate all four supervisors and average NQF Level 4 in Supervision of Civil Engineering/Construction Processes will not be used to allocate points
	Technical qualification of Construction Contract Manager	15	a) N3 to N5 Certificate in the Built Environment = 1 b) N6 or National Diploma in Civil Engineering = 3 c) B-Tech/ Degree or higher in Civil Engineering = 5 NQF Level 5 in Management of Civil Engineering/ Construction Processes will not be used to allocate points
	Relevant Experience of Supervisors in Roads Construction or Maintenance Projects	15	a) 1 to 2yr experience = 1 b) 3 to 4yrs experience = 3 c) + 5yrs experience = 5 NB: Rate all four supervisors and average
	Occupational Health and Safety Officer Experience	5	a) 1 to 2yrs experience = 1 b) 3 to 4yrs experience = 3 c) + 5yrs experience = 5
			Maximum number of points
			100
			75
			75
			75
			25

	<table border="1"> <tr> <td data-bbox="331 228 646 353">Relevant experience of Construction Contract Manager in Roads related Projects</td> <td data-bbox="646 228 790 353">15</td> <td data-bbox="790 228 1220 353">a) 1 to 2yrs relevant experience = 1 b) 3 to 4yrs relevant experience = 3 c) + 5yrs relevant experience = 5</td> <td data-bbox="1220 228 1388 353">75</td> </tr> <tr> <td data-bbox="331 353 646 996">Size of Enterprise and Current Workload of Bidder</td> <td data-bbox="646 353 790 996">15</td> <td data-bbox="790 353 1220 996"> Capacity to execute the contract (with reference to current projects) a) Current value of projects is equal or greater than twice the maximum value of the required CIDB grade = 0 b) Current value of projects is greater than the maximum value of the required CIDB grade but less than twice the maximum value of the required CIDB grade = 4 c) Current value of projects is within the required CIDB threshold = 6 d) Current value of projects is less than the minimum value of the required CIDB grade = 8 NB: Bidder shall declare all current projects in form T.2.1.2F </td> <td data-bbox="1220 353 1388 996">120</td> </tr> <tr> <td colspan="2" data-bbox="331 996 790 1064">Maximum possible score for quality (Ms)</td> <td data-bbox="790 996 1220 1064"></td> <td data-bbox="1220 996 1388 1064">545</td> </tr> </table>	Relevant experience of Construction Contract Manager in Roads related Projects	15	a) 1 to 2yrs relevant experience = 1 b) 3 to 4yrs relevant experience = 3 c) + 5yrs relevant experience = 5	75	Size of Enterprise and Current Workload of Bidder	15	Capacity to execute the contract (with reference to current projects) a) Current value of projects is equal or greater than twice the maximum value of the required CIDB grade = 0 b) Current value of projects is greater than the maximum value of the required CIDB grade but less than twice the maximum value of the required CIDB grade = 4 c) Current value of projects is within the required CIDB threshold = 6 d) Current value of projects is less than the minimum value of the required CIDB grade = 8 NB: Bidder shall declare all current projects in form T.2.1.2F	120	Maximum possible score for quality (Ms)			545		
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Maximum possible score for quality (Ms)			545												
<p>Quality shall be scored by not less than three persons satisfying the requirements of the Standard for Infrastructure Procurement and Delivery Management.</p>															
<p>Total score for Functionality = $\frac{\text{Total Score obtained by the Bidder} \times 100}{545}$ (Maximum score)</p>															
<p>The minimum number of evaluation points for quality is 70% a bidder who scores below this minimum shall be disqualified and shall not be considered for further evaluation.</p>															
<p>NOTE: In order for the bidder to claim points for experience under quality, the bidder must also attach a copy of Completion / Final approval Certificate for each of the completed projects to Form T2.1.2G: In the event the bidder was a Subcontractor, the bidder must attach the following proof for each completed projects:</p> <ul style="list-style-type: none"> • Copy of Completion / Final approval Certificate issued by the Main Contractor, and • Copy of Completion Certificate of the Main Contractor for the same project from the client 															

5.13

Administrative compliance

Noncompliant to the following administrative requirements shall lead to disqualification

Item	Description	Yes	No
01	Power of attorney / authority for signatory (duly completed and signed)		
02	Joint Venture Agreement (duly completed and signed)		
03	Submission of NQF certificates level 4 in Supervision of Civil Engineering/Construction Processes and 5 in Management of Civil Engineering/ Construction Processes		
04	Form of Offer duly signed and completed		
05	Price/rates amendment without signature in the bill of quantity		
06	Non-completion of the Bills of Quantities in full		
07	Usage of correction fluid		
08	Certificate of Non-Collusion duly signed and completed		
09	Alterations to the bid document or submission of a copy of the original bid document		
10	Completion of the bid document (or returnable schedules) using pencil		

The minimum number of jobs to be created on this project is 248, calculated from the total of Civil Works of the Bill of Quantities. A bidder whose offer will create fewer jobs than the target will not be considered for appointment.

All bidders are required to have registered with National Treasury's Central Supplier Database

The institution reserves the rights not to appoint the lowest bid nor award more than one bid

Evaluation in terms of the 80/20 Preference Point System:

Responsive tenders which have achieved the minimum qualification score for functionality will be evaluated further, using the 80/20 preference point system.

Step 1: Calculation of points for Price

The PPPFA prescribes that the lowest acceptable bid will score 80 points for price. Bidders that quoted higher prices will score lower points for price on a pro-rata basis. The formula to be used for calculating points scored for price is the following:

$$P_s = 80 \left(1 - \frac{P_t - P_{\min}}{P_{\min}} \right)$$

Where

Ps = Points scored for price of tender under consideration
Pt = Price of tender under consideration and
Pmin = Price of lowest acceptable tender

Points scored must be rounded off to the nearest 2 decimal places

Step 2: Calculation of points for B-BBEE status level of contributor

Points shall be awarded to a bidder for attaining the B-BBEE status level of contribution in accordance with the table below

B-BBEE Status Level of Contributor	Number of points (80/20 system)
1	20
2	18
3	14
4	12
5	8
6	6
7	4
8	2
Non-compliant contributor	0

	<p>A bid shall not be disqualified from the bidding process if the bidder does not submit a certificate substantiating the B-BBEE status level of contribution nor is a non-compliant contributor. Such a bidder will score zero (0) out of a maximum of 10 points for B-BBEE.</p> <p>The points scored for price shall be added to the points scored for B-BBEE status level of contribution to obtain the bidder's total points scored out of 100.</p> <p>A tenderer may not be awarded points for B-BBEE status level of contributor if the tender documents indicate that the tenderer intends subcontracting more than 25% of the value of the contract to any other person not qualifying for at least the points that the tenderer qualifies for, unless the intended subcontractor is an EME that has the capability to execute the subcontract.</p> <p>Award of contract to bids not scoring the highest number of points</p> <p>(a) A contract will be awarded to the bidder who scored the highest total number of points subject to sub regulation (9) and regulation 11 of the Act.</p> <p>(b) In exceptional circumstances a contract may, on reasonable and justifiable grounds, be awarded to a bidder that did not score the highest number of points. The reasons for such a decision must be approved and recorded for audit purposes and must be defensible in a court of law.</p> <p>Evaluation of bids that scored equal points</p> <p>(a) In the event that two or more bids have scored equal total points, the successful bid must be the one that scored the highest points for B-BBEE.</p> <p>(b) If two or more bids have equal points, including equal preference points for B-BBEE, the successful bid must be the one scoring the highest score for functionality.</p> <p>(c) In the event that two or more bids are equal in all respects, the award must be decided by the drawing of lots.</p>
5.13	<p>Tender offers will only be accepted if:</p> <ol style="list-style-type: none"> a) the tenderer is registered on the Central Supplier Database (CSD) for the South African government (see https://secure.csd.gov.za/) unless it is a foreign supplier with no local registered entity b) the tenderer is in good standing with SARS according to the Central Supplier Database; c) the tenderer is registered with the Construction Industry Development Board in an appropriate contractor grading designation; d) the tenderer or any of its directors/shareholders is not listed on the Register of Tender Defaulters in terms of the Prevention and Combating of Corrupt Activities Act of 2004 as a person prohibited from doing business with the public sector; e) the tenderer has not: <ol style="list-style-type: none"> i) abused the Employer's Supply Chain Management System; or ii) failed to perform on any previous contract and has been given a written notice to this effect; f) the tenderer has completed the Compulsory Declaration and there are no conflicts of interest which may impact on the tenderer's ability to perform the contract in the best interests of the employer or potentially compromise the tender process; g) the tenderer is registered and in good standing with the compensation fund or with a licensed compensation insurer; h) the employer is reasonably satisfied that the tenderer has in terms of the Construction Regulations, 2003, issued in terms of the Occupational Health and Safety Act, 1993, the necessary competencies and resources to carry out the work safely.
5.17	<p>The number of paper copies of the signed contract to be provided by the employer is one.</p>
	<p>The additional conditions of tender are:</p> <p>SMME's:</p> <p>It is a requirement of this contract that participation in the contract must be granted to local SMME companies. Local is defined as "having their head office within the Limpopo Province boundaries". SMME company should be a registered company, but not necessarily be registered with CIDB, although it is preferred. The minimum target for local SMME participation shall be 5% of the Civil works. This can be achieved through either one or more local SMME companies.</p>

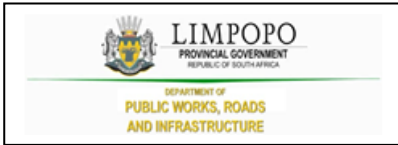
Local Labour Content:

The minimum number of jobs to be created on this project is 260, calculated from the total of Civil Works of the Bill of Quantities. A bidder whose offer will create fewer jobs than the target will not be considered for appointment.

Formula:

$$Wo = \frac{\text{TOTAL SCHEDULE A: ROUTINE ROAD MAINTENANCE} \times 8.1}{1,000,000.00}$$

Wo: work opportunity (jobs to be created)



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T.2.1 List of returnable documents

1. Documentation to demonstrate eligibility to have tenders evaluated

- Organogram, qualifications & experience of the Bidder's proposed key personnel.
- NQF level 4 in Supervision of Civil Engineering/Construction Processes for the required four (4) supervisors (Site Agent) issued only by CETA
- NQF level 5 in the Management of Civil Engineering/Construction Processes for the required Contract Manager issued only by CETA

Note: Failure to provide these documents will result in the tender not being evaluated

2 Returnable Schedules required for tender evaluation purposes

The tenderer **must** complete the following returnable schedules as relevant:

- Record of Addenda to Tender Documents
- Compulsory Declaration
- Certificate of Authority for Joint Ventures, if applicable
- Preferencing Schedule: Broad Based Black Economic Empowerment Status
- Annual Financial Statements Declaration
- Schedule of the bidder's current projects
- Schedule of the bidder's previous experience
- Schedule of plant and equipment
- Schedule of proposed subcontractors
- Schedule of local labour content
- Project Programme and Method statement

3 Other documents required for tender evaluation purposes

The tenderer must provide the following returnable documents:

- Verification certificate from a verification agency accredited by SANAS and recognized as an Accredited B-BBEE Verification Agencies (see www.sanas.co.za/directory/bbee_default.php) or a registered auditors approved by IRBA if preference points are claimed in respect of Broad-Based Black Economic Empowerment.
- Suitable annual financial statements for the preceding financial year within 12 months of the financial year end
- A letter of Good Standing from the Compensation Fund or a licensed insurer as contemplated in the Compensation for Occupational Injuries and Diseases Act 1993 (Act No. 130 of 1993)
-

4 Other documents that will be incorporated into the contract

- Project Programme and Method statement
- Rates for special materials
- Schedule of estimated monthly expenditure

C1.1 Offer portion of Form of Offer and Acceptance

C1.2 Contract Data (Part 2)

C1.3 Agreement in terms of the Occupational Health and Safety Act 85 of 1993 and appointment as mine manager in terms of section 3(1)(a) of Mine Health and Safety Act 29 of 1996

C1.4 Abstracts of the Mine Health and Safety Act no. 29 of 1996 and amendment Act no. 72 of 1997

C1.5 Performance Guarantee

C1.6 Price List

Failure to sign the form of offer and acceptance will render the tender “non-responsive”

The Tenderer’s attention is drawn to Part 2 of the Contract Data which requires the Tenderer to tender staff rates. Failure to tender the staff rates will render the tender non-responsive. Failure to tender the staff rates in the prescribed manner may compromise the competitiveness of the tenderer.

Compensation events which result in changes to the Prices are assessed on the basis of time charges (i.e. the products of each of the staff rates multiplied by the total staff time appropriate to that rate properly spent on work in the contract) These staff rates are used when making changes to the Prices in terms of the Contract. Tenderers need to price these staff rates realistically as they will be taken into account when evaluating tender offers – see Tender Assessment Schedule.

The Prices for Services Provided to Date and compensation events which result in changes to the Prices are assessed on the basis of time charges (i.e. the products of each of the staff rates multiplied by the total staff time appropriate to that rate properly spent on work in the contract) These staff rates are used when assessing the amount due and when making changes to the Prices in terms of the Contract. Tenderers need to price these staff rates realistically as they will be taken into account when evaluating tender offers – see Tender Assessment Schedule.

The Tenderer’s attention is drawn to Part 2 of the Contract Data which requires the Tenderer to tender a percentage for overheads and profit added to the Defined Cost. Failure to tender this percentage will render the tender non-responsive.

Compensation events which result in changes to the Prices are assessed on the basis of Defined Cost (i.e. the amount paid by the Supplier in providing the Goods and Services (excluding any tax which the Supplier can recover) for people, equipment, plant and materials to be included in the goods, and transport whether the work is subcontracted or not). This percentage for overheads and profit is applied to Defined Cost when making changes to the Prices in terms of the Contract. This percentage covers everything that is not included in Defined Cost. Tenderers need to price this percentage realistically as it will be taken into account when evaluating tender offers – see Tender Assessment Schedule.

The Tenderer’s attention is drawn to Part 2 of the Contract Data which requires the Tenderer to tender a direct fee percentage and a subcontracted fee percentage. Failure to tender these fee percentages will render the tender non-responsive.

Compensation events which result in changes to the Prices are assessed on the basis of Defined Cost (i.e. the payments by the Contractor in Providing the Services for people employed by the Contractor, Plant and Materials, work subcontracted by the Contractor and Equipment). These fee percentages are applied to components of Defined Cost when making changes to the Prices in terms of the Contract and cover everything that is not included in Defined Cost. Tenderers need to price these percentages realistically as they will be taken into account when evaluating tender offers – see Tender Assessment Schedule.

The Prices for Services Provided to Date and compensation events which result in changes to the Prices are assessed on the basis of Defined Cost (i.e. the payments by the Contractor in Providing the Services for people employed by the Contractor, Plant and Materials, work subcontracted by the Contractor and Equipment). These percentages are applied to components of Defined Cost when assessing the amounts due to the Contractor or making changes to the Prices in terms of the Contract and cover everything that is not included in Defined Cost. Tenderers need to price these percentages realistically as they will be taken into account when evaluating tender offers – see Tender Assessment Schedule

The Tenderer's attention is drawn to Part 2 of the Contract Data which requires the Tenderer to tender a percentage for overheads and profit added to the Defined Cost for people and a percentage for overheads and profit added to other Defined Cost. Failure to tender these percentages will render the tender non-responsive.

Compensation events which result in changes to the Prices are assessed on the basis of Defined Cost (i.e. the amount paid by the Contractor in Providing the Services (excluding any tax which the Contractor can recover) for people employed by the Contractor, plant and materials, work subcontracted by the Contractor and equipment). These percentages for overheads and profit are applied to components of Defined Cost when making changes to the Prices in terms of the Contract. These percentages cover everything that is not included in Defined Cost. Tenderers need to price these percentages realistically as they will be taken into account when evaluating tender offers – see Tender Assessment Schedule.

The Tenderer's attention is drawn to Part 2 of the Contract Data which requires the Tenderer to tender a percentage for overheads and profit added to the Defined Cost for people and a percentage for overheads and profit added to other Defined Cost. Failure to tender these percentages will render the tender non-responsive.

Compensation events which result in changes to the Prices are assessed on the basis of Defined Cost (i.e. the amount paid by the Contractor in Providing the Works (excluding any tax which the Contractor can recover) for people employed by the Contractor, plant and materials, work subcontracted by the Contractor and equipment). These percentages for overheads and profit are applied to components of Defined Cost when making changes to the Prices in terms of the Contract. These percentages cover everything that is not included in Defined Cost. Tenderers need to price these percentages realistically as they will be taken into account when evaluating tender offers – see Tender Assessment Schedule.

The Tenderer's attention is drawn to Part 2 of the Contract Data which requires the Tenderer to tender a direct fee percentage, a subcontracted fee percentage and a number of other cost parameters. Failure to tender these percentages and cost parameters will render the tender non-responsive.

Compensation events which result in changes to the Price are assessed on the basis of Defined Cost (i.e. the cost of the components in the Shorter Schedule of Cost Components whether work is subcontracted or not, as derived from the tendered cost parameters). These fee percentages are applied to components of Defined Cost when making changes to the Prices in terms of the Contract and cover everything that is not included in Defined Cost. Tenderers need to price these percentages and the cost parameters associated with the Schedule of Cost Components realistically as they will be taken into account when evaluating tender offers – see Tender Assessment Schedule.

The Prices for Work Done to Date and compensation events which result in changes to the Price are assessed on the basis of Defined Cost (i.e. the amount due to Subcontractors and the cost of the components in the Schedule of Cost Components or Shorter Schedule of Cost Components, as derived from the tendered cost parameters). These fee percentages are applied to components of Defined Cost when assessing the amounts due to the Contractor or making changes to the Prices in terms of the contract and cover everything that is not included in Defined Cost. Tenderers need to price these percentages and the cost parameters associated with the Schedule of Cost Components or Shorter Schedule of Cost Components realistically as they will be taken into account when evaluating tender offers – see Tender Assessment Schedule

The Tenderer's attention is drawn to Part 2 of the Contract Data which requires the Tenderer to tender a direct fee percentage and a subcontracted fee percentage and a number of other cost parameters. Failure to tender these percentages and cost parameters will render the tender non-responsive.

The Price for Work Done to Date and compensation events which result in changes to the Prices are assessed on the basis of Defined Cost (i.e. the amount due to Subcontractors and the prices for work done by the Contractor himself). These percentages are applied to components of Defined Cost when making changes to the Prices in terms of the Contract and cover everything that is not included in Defined Cost. Tenderers need to price these percentages and the cost parameters associated with the Schedule of cost Components realistically as they will be taken into account when evaluating tender offers – see Tender Assessment Schedule.

T2.2 Returnable Schedules

T2.2A. Record of Addenda to tender documents

We confirm that the following communications received from the Employer before the submission of this tender offer, amending the tender documents, have been taken into account in this tender offer:		
	Date	Title or Details
1.		
2.		
3.		
4.		
5.		
6.		
7.		
8.		
9.		
10.		

Attach additional pages if more space is required.

SIGNED ON BEHALF OF BIDDER:

.....

Annexure B: Proposed amendments and qualifications

The Tenderer should record any deviations or qualifications he may wish to make to the tender documents in this Returnable Schedule. Alternatively, a tenderer may state such deviations and qualifications in a covering letter to his tender and reference such letter in this schedule.

The Tenderer's attention is drawn to clause 5.8 of SANS 10845-3 regarding the employer's handling of material deviations and qualifications.

Page	Clause or item	Proposal

Signed

Date _____

Name

Position _____

Tenderer _____

Annexure C: Preferencing schedule: Broad Based Black Economic Empowerment Status

Preamble

Section 10(b) of the Broad-Based Black Economic Empowerment Act of 2003 (Act No. 53 of 2003) states that *“Every organ of state and public entity must take into account and, as far as is reasonably possible, apply any **relevant code of good practice** issued in terms of this Act in developing and implementing a preferential procurement policy:”*

A number of codes of good practice have been issued in terms of Section 9(1) of the B-BBEE Act of 2003 including a generic code of good practice and various sector codes. The sector codes vary the metrics, weightings and targets used in the generic code of good practice to establish the overall performance of an entity and its B-BBEE status. The B-BBEE status needs to be assessed in accordance with the applicable code.

1 Conditions associated with the granting of preferences

Tenderers who claim a preference shall provide sufficient evidence of their B-BBEE Status in accordance with the requirements of section 2 in respect of the applicable code as at the closing time for submissions, failing which their claims for preferences will be rejected.

2 Sufficient evidence of qualification

2.1 Exempted micro enterprises

Sufficient evidence of qualification as an Exempted Micro-Enterprise is a :

- a) a registered auditor’s certificate or similar certificate issued by an accounting officer as contemplated in the Close Corporation Act of 1984 in respect of the entity’s last financial year or a 12 month period which overlaps with its current financial year; or a certificate issued by a verification agency and which is valid as at the closing date for submissions; or.
- b) a sworn affidavit - B-BBEE Exempted Micro Enterprise (see www.thedti.gov.za/gazettes/Affidavit_EME.pdf)

2.2 Enterprises other than micro exempted enterprises

Sufficient evidence of B-BBEE Status is:

- a) an original or certified copy of the certificate issued by a verification agency accredited by the South African National Accreditation System (SANAS) or registered auditors approved by Independent Regulatory Board for Auditors (IRBA) and which is valid as at the closing date for submissions; or.
- b) a sworn affidavit – B-BBEE Qualifying Small Enterprise (see www.thedti.gov.za/gazettes/BBEE_QUALIFYING_SMALL_ENTERPRISE.pdf)

3 Tender preferences claimed

The scoring shall be as follows:

B-BBEE status determined in accordance with the preferencing schedule for Broad-Based Black Economic Empowerment	% max points for preference
Form not completed or no-complaint contributor	0
Level 8 contributor	10
Level 7 contributor	20
Level 6 contributor	30
Level 5 contributor	40
Level 4 contributor	60
Level 3 contributor	70
Level 2 or contributor	90
Level 1 contributor	100

4 Declaration

The tenderer declares that

- a) the tendering entity is a level contributor as stated in the submitted evidence of qualification as at the closing date for submissions
- b) the tendering entity has been measured in terms of the following code *(tick applicable box)*
 - Generic code of good practice

 - Other – specify
- c) the contents of the declarations made in terms of a) and b) above are within my personal knowledge and are to the best of my belief both true and correct

The undersigned, who warrants that he / she is duly authorised to do so on behalf of the tenderer confirms that he / she understands the conditions under which such preferences are granted and confirms that the tenderer satisfies the conditions pertaining to the granting of tender preferences.

Signature :

Name :

Duly authorised to sign on behalf of :

Telephone :

Fax: Date :

Name of witness Signature of witness

- Note:**
- 1) Failure to complete the declaration will lead to the rejection of a claim for a preference
 - 2) Supporting documentation of the abovementioned claim for a preference must be submitted with the tender submission to be eligible for a preference

T2.2D Compulsory Declaration

The following particulars must be furnished. In the case of a joint venture, separate declaration in respect of each partner must be completed and submitted.

Section 1: Enterprise Details		
Name of enterprise:		
Contact person:		
Email:		
Telephone:		
Cell no		
Fax:		
Physical address		
Postal address		
Section 2: Particulars of companies and close corporations		
Company / Close Corporation registration number		
Section 3: SARS Information		
Tax reference number		
VAT registration number:	<i>State Not Registered if not registered for VAT</i>	
Section 4: CIDB registration number		
CIDB Registration number (if applicable)		
Section 5: National Treasury Central Supplier Database		
Supplier number		
Unique registration reference number		
Section 6: Particulars of principals		
<p>principal: means a natural person who is a partner in a partnership, a sole proprietor, a director of a company established in terms of the Companies Act of 2008 (Act No. 71 of 2008) or a member of a close corporation registered in terms of the Close Corporation Act, 1984, (Act No. 69 of 1984).</p>		
Full name of principal	Identity number	Personal tax reference number
Attach separate page if necessary		

Section 7: Record in the service of the state

Indicate by marking the relevant boxes with a cross, if any principal is currently or has been within the last 12 months in the service of any of the following:

- a member of any municipal council
- a member of any provincial legislature
- a member of the National Assembly or the National Council of Province
- a member of the board of directors of any municipal entity
- an official of any municipality or municipal entity
- an employee of any department, national or provincial public entity or constitutional institution within the meaning of the Public Finance Management Act of 1999 (Act No. 1 of 1999)
- a member of an accounting authority of any national or provincial public entity
- an employee of Parliament or a provincial legislature

If any of the above boxes are marked, disclose the following:

Name of principal	Name of institution, public office, board or organ of state and position held	Status of service <i>(tick appropriate column)</i>	
		Current	Within last 12 months

*insert separate page if necessary

Section 8: Record of family member in the service of the state

family member: a person's spouse, whether in a marriage or in a customary union according to indigenous law, domestic partner in a civil union, or child, parent, brother, sister, whether such a relationship results from birth, marriage or adoption

Indicate by marking the relevant boxes with a cross, if any family member of a principal as defined in section 5 is currently or has been within the last 12 months been in the service of any of the following:

- a member of any municipal council
- a member of any provincial legislature
- a member of the National Assembly or the National Council of Province
- a member of the board of directors of any municipal entity
- an official of any municipality or municipal entity
- an employee of any provincial department, national or provincial public entity or constitutional institution within the meaning of the Public Finance Management Act, 1999 (Act 1 of 1999)
- a member of an accounting authority of any national or provincial public entity
- an employee of Parliament or a provincial legislature

Name of family member	Name of institution, public office, board or organ of state and position held	Status of service <i>(tick appropriate column)</i>	
		Current	Within last 12 months

*insert separate page if necessary

Section 9: Record of termination of previous contracts with an organ of state

Was any contract between the tendering entity including any of its joint venture partners terminated during the

past 5 years for reasons other than the employer no longer requiring such works or the employer failing to make payment in terms of the contract.

Yes No (Tick appropriate box)

If yes, provide particulars (interest separate page if necessary)

Section 10: Declaration

The undersigned, who warrants that he / she is duly authorised to do so on behalf of the tendering entity confirms that the contents of this Declaration are within my personal knowledge, and save where stated otherwise in an attachment hereto, are to the best of my belief both true and correct, and:

- i) neither the name of the tendering entity or any of its principals appears on:
 - a) the Register of Tender Defaulters established in terms of the Prevention and Combating of Corrupt Activities Act of 2004 (Act No. 12 of 2004)
 - b) National Treasury's Database of Restricted Suppliers (see www.treasury.gov.za)
- ii) neither the tendering entity or any of its principals has within the last five years been convicted of fraud or corruption by a court of law (including a court outside of the Republic of South Africa);
- iii) any principal who is presently employed by the state has the necessary permission to undertake remunerative work outside such employment (attach permission to this declaration);
- iv) the tendering entity is not associated, linked or involved with any other tendering entities submitting tender offers
- v) has not engaged in any prohibited restrictive horizontal practices including consultation, communication, agreement, or arrangement with any competing or potential tendering entity regarding prices, geographical areas in which goods and services will be rendered, approaches to determining prices or pricing parameters, intentions to submit a tender or not, the content of the submission (specification, timing, conditions of contract etc) or intention to not win a tender;
- vi) has no other relationship with any of the tenderers or those responsible for compiling the scope of work that could cause or be interpreted as a conflict of interest;
- vii) neither the tenderer or any of its principals owes municipal rates and taxes or municipal service charges to any municipality or a municipal entity and are not in arrears for more than 3 months;
- viii) SARS may, on an on-going basis during the term of the contract, disclose the tenderer's tax compliance status to the Employer and when called upon to do so, obtain the written consent of any subcontractors who are subcontracted to execute a portion of the contract that is entered into in excess of the threshold prescribed by the National Treasury, for SARS to do likewise.

SIGNED ON BEHALF OF BIDDER:

NOTE 1 The Standard Conditions of Tender contained in SANS 10845-3 prohibits anticompetitive practices (clause 3.1) and requires that tenderers avoid conflicts of interest, only submit a tender offer if the tenderer or any of his principals is not under any restriction to do business with employer (4.1.1) and submit only one tender either as a single tendering entity or as a member in a joint venture (clause 4.13.1). Clause 5.7 also empowers the Employer to disqualify any tenderer who engages in fraudulent and corrupt practice. Clause 3.1 also requires tenderers to comply with all legal obligations.

NOTE 2: Section 30(1) of the Public Service Act, 1994, prohibits an employee (person who is employed in posts on the establishment of departments) from performing or engaging remunerative work outside his or her employment in the relevant department, except with the written permission of the executive authority of the department. When in operation, Section 8(2) of the Public Administration Management Act, 2014, will prohibit an employee of the public administration (i.e. organs of state and all national departments, national government components listed in Part A of Schedule 3 to the Public Service Act, provincial departments including the office of the premier listed in Schedule 1 of the Public Service Act and provincial departments listed in schedule 2 of the Public Service Act, and provincial government components listed in Part B of schedule 3 of the Public Service Act) or persons contracted to executive authorities in accordance with the provisions of section 12A of the Public Service Act of 1994 or persons performing similar functions in organs of state from conducting business with the State or to be a director of a public or private company conducting business with the State. The offence for doing so is a fine or imprisonment for a period not exceeding 5 years or both. It is also a serious misconduct which may result in the termination of employment by the employer.

NOTE 3: Regulation 44 of Supply Chain Management regulations issued in terms of the Municipal Finance Management Act of 2003 requires that organs of state and municipal entities not award a contract to a person who is the service of the state, a director, manager or principal shareholder in the service of the state or who has been in the service of the state in the previous twelve months.

NOTE: 4: Regulation 45 of Supply Chain Management regulations requires a municipality or municipal entity to disclose in the notes to the annual statements particulars of any award made to a close family member in the service of the state.

NOTE: 5 Corrupt activities which give rise to an offence in terms of the Prevention and Combating of Corrupt Activities Act of 2004) include improperly influencing in any way the procurement of any contract, the fixing of the price, consideration or other moneys stipulated or otherwise provided for in any contract and the manipulating by any means of the award of a tender.

NOTE: 6 Section 4 of the Competition Act of 1998 prohibits restrictive horizontal practice including agreements between parties in a horizontal relationship which have the effect of substantially preventing or lessening competition, directly or indirectly fixing prices or dividing markets or constitute collusive tendering. Section 5 also prohibits restrictive vertical practices. Any restrictive practices that are suspicious will be reported to the Competition Commission for investigation and possible imposition of administrative penalties.

Annexure E: Municipal declaration and returnable documents

The following particulars must be furnished in relation to tenders for municipalities and municipal entities:

- a) where consultancy services are required; and
- b) goods, services or a combination thereof, where the estimated total of the prices exceeds R10 million, including VAT.

In the case of a joint venture, separate municipal declarations and returnable documents shall be submitted in respect of each partner.

Section 1: Enterprise details

Name of enterprise	
Contact person	
Email	
Telephone	
Cell	
Fax	
Physical address	
Postal address	

Section 2: Declaration for consultancy services

The enterprise has been awarded the following consultancy services by an organ of state during the last five years:

Name of organ of state	Estimated number of contracts	Nature of service, e.g. quantity surveying	Service similar to required service (yes/no)?

Attach separate page as necessary

Section 3: Goods, services, or a combination thereof, where the estimated total of the prices exceeds R10 million, including VAT

I/we certify that

1) (tick one of the boxes):

- the enterprise **is not** required by law to prepare annual financial statements for auditing
- the enterprise **is** required by law to have audited annual financial statements (attached herewith for the past three financial years or the years for which the enterprise has been in operation)

2) the enterprise and its directors have no undisputed commitments for municipal services towards a

municipality or other service provider in respect of which payment is overdue for more than 30 days (i.e. all municipal accounts are paid up to date);

3) source of goods and/or services :

(tick one of the boxes and insert percentages if applicable)

- goods and/or services are sourced only from within the Republic of South Africa
- % of the total cost of goods and/or services will be sourced from outside the Republic of South Africa, and the percentage of payment from the municipality or municipal entity which is expected to be transferred out of the Republic is . %

I furthermore confirm that the following contracts were awarded to the enterprise by an organ of state during the last five years and attached particulars of any material non-compliance or dispute concerning the execution of such contracts:

Name of organ of state	Estimated number of contracts	Nature of contracts

Attach separate page as necessary

I, the undersigned who warrants that I am duly authorised on behalf of the tendering entity, hereby declare that the contents of this Declaration are within my personal knowledge, and save where stated otherwise, are to the best of my belief both true and correct.

Signed

Date

Name

Position

Tenderer _____

T.2.1.2C Certificate of Authority for Joint Ventures

This Returnable Schedule is to be completed by joint ventures.

We, the undersigned, are making this submission in Joint Venture and hereby authorise Mr/Ms
 , authorised signatory of the company
 , acting in the capacity of lead partner, to sign all documents
 in connection with the tender offer and any contract resulting from it on our behalf.

NAME OF FIRM	ADDRESS	DULY AUTHORIZED SIGNATORY
Lead partner		Signature. Name Designation
		Signature. Name Designation
		Signature. Name Designation

SIGNED ON BEHALF OF BIDDER:

Preamble

Section 10(b) of the Broad-Based Black Economic Empowerment Act of 2003 (Act No. 53 of 2003) states that “Every organ of state and public entity must take into account and, as far as is reasonably possible, apply any **relevant code of good practice** issued in terms of this Act in developing and implementing a preferential procurement policy.”

A number of codes of good practice have been issued in terms of Section 9(1) of the B-BBEE Act of 2003 including a generic code of good practice and various sector codes. The sector codes vary the metrics, weightings and targets used in the generic code of good practice to establish the overall performance of an entity and its B-BBEE status. The B-BBEE status needs to be assessed in accordance with the applicable code.

1 Conditions associated with the granting of preferences

Tenderers who claim a preference shall provide sufficient evidence of their B-BBEE Status in accordance with the requirements of section 2 in respect of the applicable code as at the closing time for submissions, failing which their claims for preferences will be rejected.

2 Sufficient evidence of qualification

2.1 Exempted micro enterprises

Sufficient evidence of qualification as an Exempted Micro-Enterprise is a :

- a) a registered auditor’s certificate or similar certificate issued by an accounting officer as contemplated in the Close Corporation Act of 1984 in respect of the entity’s last financial year or a 12 month period which overlaps with its current financial year; or a certificate issued by a verification agency and which is valid as at the closing date for submissions; or.
- b) a sworn affidavit - B-BBEE Exempted Micro Enterprise (see www.thedti.gov.za/gazettes/Affidavit_EME.pdf)

2.2 Enterprises other than micro exempted enterprises

Sufficient evidence of B-BBEE Status is:

- c) an original or certified copy of the certificate issued by a verification agency accredited by the South African National Accreditation System (SANAS) or registered auditors approved by Independent Regulatory Board for Auditors (IRBA) and which is valid as at the closing date for submissions; or.
- d) a sworn affidavit – B-BBEE Qualifying Small Enterprise (see www.thedti.gov.za/gazettes/BBEE_QUALIFYING_SMALL_ENTERPRISE.pdf)

3 Tender preferences claimed

The scoring shall be as follows:

B-BBEE status determined in accordance with the preferencing schedule for Broad-Based Black Economic Empowerment	% max points for preference
Form not completed or no-complaint contributor	0
Level 8 contributor	10
Level 7 contributor	20
Level 6 contributor	30
Level 5 contributor	40
Level 4 contributor	60
Level 3 contributor	70
Level 2 or contributor	90
Level 1 contributor	100

4 Declaration

The tenderer declares that

- a) the tendering entity is a level contributor as stated in the submitted evidence of qualification as at the closing date for submissions
- b) the tendering entity has been measured in terms of the following code *(tick applicable box)*
 - Generic code of good practice

 - Other – specify
- c) the contents of the declarations made in terms of a) and b) above are within my personal knowledge and are to the best of my belief both true and correct

The undersigned, who warrants that he / she is duly authorised to do so on behalf of the tenderer confirms that he / she understands the conditions under which such preferences are granted and confirms that the tenderer satisfies the conditions pertaining to the granting of tender preferences.

Signature :

Name :

Duly authorised to sign on behalf of :

Telephone :

Fax: Date :

Name of witness Signature of witness

- Note:**
- 1) Failure to complete the declaration will lead to the rejection of a claim for a preference
 - 2) Supporting documentation of the abovementioned claim for a preference must be submitted with the tender submission to be eligible for a preference

T2.1.2E Annual Financial Statements Declaration

The undersigned, who warrants that he / she is duly authorised to do so on behalf of the respondent, confirms that:

- 1) The enterprise's financial year end is
- 2) The enterprise's financial statements have been prepared in accordance with the provisions of the Companies Act of 2008 or the Close Corporation Act of 1984, as applicable
- 3) The enterprise has compiled its financial accounts [tick one box]:
 - internally independently
- 4) The following statement applies to the enterprise [tick one box and provide relevant information]
 - enterprise has had its financial statements audited;
 - name of auditor
 - enterprise is required by law to have an independent review of its financial statements
 - name of independent reviewer
 - enterprise has not had its financial statements audited and is not required by law to have an independent review or audit of such statements
- 5) The attached income statement and balance sheet is a true extract from the financial statements complying with applicable legislation for the preceding financial year within 12 months of the financial year end.

[Attach the income statement and the balance sheet contained in the financial statement]
- 6) The annual turnover for the last financial year is R
- 7) The total assets as at the end of the last financial year is R
- 8) The total liabilities as at the end of the financial year is R

I hereby declare that the contents of this Declaration are within my personal knowledge, and save where stated otherwise are to the best of my belief both true and correct.

.....
Signed

Date

.....
Name

Position

Tenderer

.....

T2.1.2F SCHEDULE OF THE BIDDER’S CURRENT PROJECTS

The following is a statement of **all** works currently being executed by myself/ourselves:

Employer, contact person and telephone number	Description of contract	Value of work Inclusive of VAT (Rand)	CIDB Classification	Date to be Completed

NOTE: The bidder shall attach copies of appointment Letters as proof for each of the above projects. If the table above is not duly completed at the time the tender closes, or is found to be unacceptable/ misleading, the employer may terminate the contract in terms of clause 9.2 of the General Conditions of Contract 2015 3rd Edition.

SIGNED ON BEHALF OF BIDDER:

T2.1.2G SCHEDULE OF THE BIDDER'S PAST EXPERIENCE

The following is a statement of **similar** work successfully executed by myself/ourselves:

Employer, contact person and telephone number	Description of contract	Value of work Inclusive of VAT (Rand)	CIDB Classification	Date Completed

NOTE: In order for the Bidder to claim points for Experience under Functionality for the above listed projects, the Bidder must attach the following proof for each of the projects:

- Copy of Appointment Letter, and
- Copy of Completion Certificate.

SIGNED ON BEHALF OF BIDDER:

T2.1.2I SCHEDULE OF PLANT AND EQUIPMENT

The following are lists of major items of relevant equipment that I/we presently own or lease **and will make available for this contract** or will acquire **or hire for this contract** if my/our tender is accepted.

(a) Details of major equipment that is owned by and immediately available for this contract.

Quantity	Description, size, capacity, etc.

Attach additional pages if more space is required.

(b) Details of major equipment that will be hired, or acquired for this contract if my/our tender is acceptable

Quantity	Description, size, capacity, etc.

Attach additional pages if more space is required

SIGNED ON BEHALF OF BIDDER:

T2.1.2J CONTRACTOR'S ESTABLISHMENT ON SITE

Should the combined extended total tendered for Item M030.01 and M030.03 (a) for the contractor's general obligations; i.e.

- (a) Fixed obligations
- (c) Time-related obligations

exceed a maximum of 15 % of the Tender Price, excluding VAT.

Total tendered for Item M0300 expressed as a percentage of the Tender Price, excluding VAT:% (insert percentage).

ESTABLISHMENT OVER AND ABOVE ITEM M0300		
ITEM	PORTION OF RATE OR SUM (R)	VALUE (RANDS)
TOTAL VALUE		

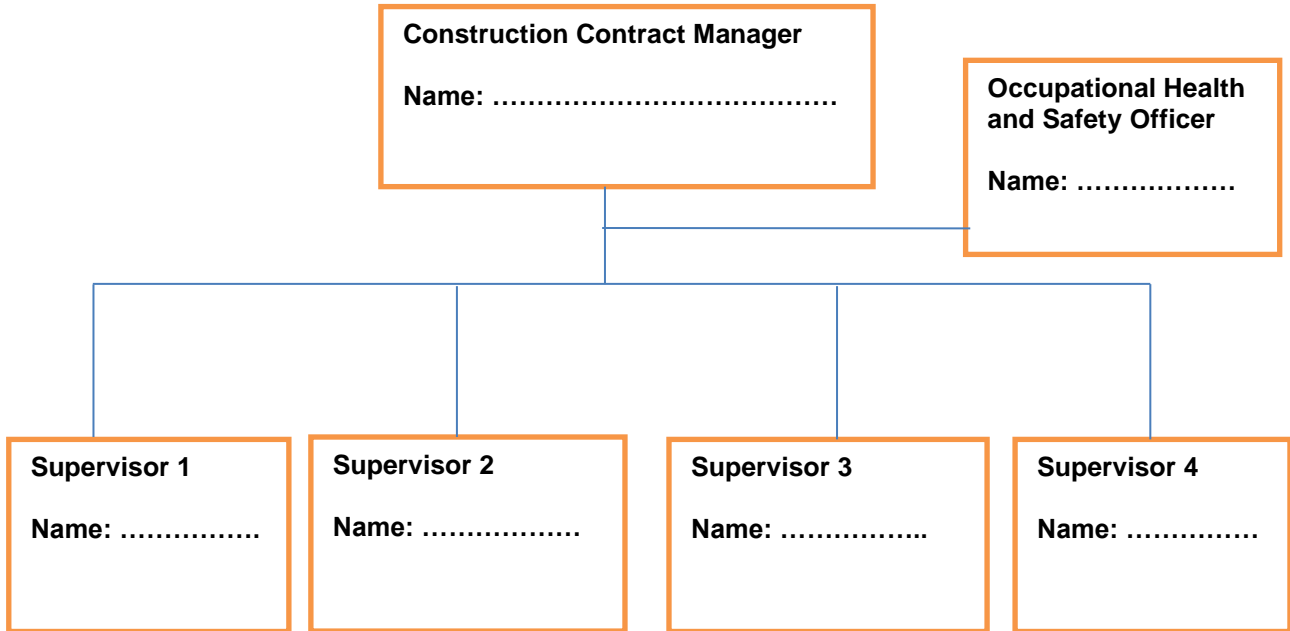
SIGNED ON BEHALF OF BIDDER:

Note to Bidder:

If the Bidder should require additional compensation for his obligations under section M0300 (over and above the total tendered for item M030.01 and M030.03 (a)) by including such additional compensation in the tendered rates and/or lump sum of items in the bill of quantities, these items and the value of such additional compensation shall also be set out in a letter attached to this form

T2.1.2K QUALIFICATIONS AND EXPERIENCE OF PROPOSED STAFF

Organogram, qualifications & experience of the Bidder's proposed site agents and Construction Contract Manager



Attach the following regarding the proposed Supervisors and Construction Contract Manager:

- (1) Certified copy of Qualifications
- (2) Detailed CV (curricula vitae) providing project descriptions, project numbers, project values, duration of the project and responsibilities in the project. Client details such as name, contact person, and contact numbers must also be provided in order for the information to be verified

The personnel included here shall be used on the project unless otherwise agreed to by the Project Manager.

SIGNED ON BEHALF OF BIDDER:

T2.1.2L PROJECT PROGRAMME AND METHOD STATEMENT

Bidder shall supply project programme of works, using acceptable software, in sufficient detail to cover the various facets of the work.

This programme shall be supported by a method statement indicating the Bidder's proposed work plan for the execution of the works.

SIGNED ON BEHALF OF BIDDER:.....

T2.1.2M SCHEDULE OF ESTIMATED MONTHLY EXPENDITURE

The Bidder shall state his estimated value of the work to be completed every month, based on his preliminary programme and his tendered unit rates, in the table below. The amounts for contingencies and contract price adjustment shall not be included.

MONTH	VALUE (INCLUDING VAT)
1	R
2	R
3	R
4	R
5	R
6	R
7	R
8	R
9	R
10	R
11	R
12 (END YEAR 1)	R
13 Total Year 2	R
14 Total Year 3	R
TOTAL: R.....	
(EXCLUDING CONTINGENCIES AND CONTRACT PRICE ADJUSTMENT)	

SIGNED ON BEHALF OF BIDDER:

T2.1.20 RATES FOR SPECIAL MATERIALS

Only bitumen products will be dealt with as a special material in terms of subclause 6.8.3 of the General Conditions of Contract. All bitumen products, as indicated in the contract data must be stated in the list below.

The rates and prices for the special materials shall be furnished by the contractor, which rates and prices shall exclude VAT but shall include all other obligatory taxes and levies.

BASE MONTH SHALL BE THE MONTH BEFORE THE CLOSING DATE OF THE BID

SPECIAL MATERIALS	UNIT *	RATE OR PRICE FOR THE BASE MONTH

* Indicate whether the material will be delivered in bulk or in containers.

When called upon to do so, the contractor shall substantiate the above rates or prices with acceptable documentary evidence from the applicable supplier of the product.

SIGNED ON BEHALF OF BIDDER:

.....

PART C1: AGREEMENT AND CONTRACT DATA

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**C1.1 FORM OF OFFER AND ACCEPTANCE
(Agreement)**

Offer

The employer, identified in the acceptance signature block, has solicited offers to enter into a contract in respect of the following works:

HOUSEHOLD ROUTINE ROAD MAINTENANCE PROJECT: EPHRAIM MOGALE LOCAL MUNICIPALITY IN SEKHUKHUNE DISTRICT.

The Bidder, identified in the Offer signature block, has examined the documents listed in the Tender Data and addenda thereto as listed in the Tender Schedules, and by submitting this Offer has accepted the Conditions of Tender.

By the representative of the Bidder, deemed to be duly authorized, signing this part of the Form of Offer and Acceptance, the Bidder offers to perform all of the obligations and liabilities of the Contractor under the Contract including compliance with all its terms and conditions according to their true intent and meaning for an amount to be determined in accordance with the Conditions of Contract identified in the Contract Data.

THE OFFERED TOTAL OF THE PRICE INCLUSIVE OF VALUE ADDED TAX IS

.....
.....

Rand (in words); R.....(in figures)

This Offer may be accepted by the Employer by signing the Acceptance part of this Form of Offer and Acceptance and returning one copy of this document to the Bidder before the end of the period of validity stated in the Tender Data, whereupon the Bidder becomes the party named as the Contractor in the Conditions of Contract identified in the Contract Data.

For the Bidder:

.....

Signature(s)

.....

Name(s)

.....

Capacity

Name and address of organization:

Signature and Name of Witness:

.....

Signature

.....

Name

Date

Acceptance

By signing this part of this Form of Offer and Acceptance, the Employer identified below accepts the Bidder's Offer. In consideration thereof, the Employer shall pay the Contractor the amount due in accordance with the Conditions of Contract identified in the Contract Data. Acceptance of the Bidder's Offer shall form an agreement between the Employer and the Bidder upon the terms and conditions contained in this Agreement and in the Contract that is the subject of this Agreement.

The terms of the Contract are contained in:

- PART C1 Agreements and Contract Data, (which includes this Agreement)
- PART C2 Pricing Data
- PART C3 Scope of Work
- PART C4 Site Information

and drawings and documents or parts thereof, which may be incorporated by reference into Parts C1 to C4 above.

Deviations from and amendments to the documents listed in the Tender Data and any addenda thereto as listed in the Tender Schedules as well as any changes to the terms of the Offer agreed by the Bidder and the Employer during this process of Offer and acceptance, are contained in the Schedule of Deviations attached to and forming part of this Agreement. No amendments to or deviations from said documents are valid unless contained in this schedule, which must be signed by the authorised representative(s) of both parties.

The Bidder shall within two weeks after receiving a completed copy of this Agreement, including the Schedule of Deviations (if any), contact the Employer's Agent (whose details are given in the Contract Data) to arrange the delivery of any bonds, guarantees, proof of insurance and any other documentation to be provided in terms of the Conditions of Contract identified in the Contract Data at, or just after, the date this Agreement comes into effect. Failure to fulfil any of these obligations in accordance with those terms shall constitute a repudiation of this Agreement.

Notwithstanding anything contained herein, this Agreement comes into effect on the date when the Bidder receives one copy of the fully signed original document, including the Schedule of Deviations (if any). Unless the Bidder (now Contractor) within five days of the date of such receipt notifies the Employer in writing of any reason why he cannot accept the contents of this Agreement, this Agreement shall constitute a binding contract between the parties.

For the Employer

.....

Signature

.....

Name

.....

Capacity

Name and address of organization:

**DEPARTMENT OF PUBLIC WORKS, ROADS &
INFRASTRUCTURE
PRIVATE BAG X9490
EPHRAIM MOGALE
0700**

Signature and Name of Witness:

.....

Signature

.....

Name

Date

.....

CONFIRMATION OF RECEIPT

The Bidder, (now Contractor), identified in the Offer part of this Agreement hereby confirms receipt from the Employer, identified in the Acceptance part of this Agreement, of one fully completed original copy of this Agreement, including the Schedule of Deviations (if any) today:

the (day)

of (month)

20..... (year)

at (place)

For the Contractor:

.....

Signature

.....

Name

.....

Capacity

Signature and name of witness:

.....

Signature

.....

Name

C1.2 CONTRACT DATA

C1.2.1 Contract Specific Data

The Conditions of Contract are the General Conditions of Contract for Construction Works (2015) 3rd Edition published by the South African Institution of Civil Engineering (GCC).

Part 1: Data provided by the Employer

Clause																
1.1.1.15	The employer is the Department of Public Works, Roads & Infrastructure, (The Department) .															
1.1.1.15	The person is the Accounting Officer of the Department															
1.1.1.17	The Employer's Agent's representative is the Construction Project Manager assigned to the Project.															
1.2.1	The employer's address for receipt of communication is: Address: Private Bag X9490, Ephraim Mogale, 0700 Telephone: 015 284 7001 Facsimile: 015 284 7030															
3.2.3	The Employer's Agent is required in terms of his appointment with the employer to obtain the following specific approvals from the employer:- 1. Approval of extension of time; 2. Approval of additional costs; 3. Approval of variation orders;															
4.3	The Health and Safety Plan shall be delivered and approved before the commencement of works.															
5.3.1.	The Works are to be commenced within fourteen (14) Days of the Site Hand-over.															
5.5.1	The Works shall be completed within twelve (12) months as envisaged by the employer, measured from the site hand-over date to due completion date.															
5.6	The Works programme is to be delivered within fourteen (14) days of the Commencement Date taken as Date of Site Hand-over															
5.8.1	The special non-working days are all designated public holidays (including all foreseeable statutory declared election days), Saturdays and Sundays The year-end break commences from 14 December 2018 to 7 January 2019															
5.13.1	The penalty for delay is R 6000.00 per day or part thereof, including special non-working days.															
5.14.5.2	Defects Liability is not applicable for this contract															
6.2.1.	The Performance Guarantee is to contain the same wording as prescribed in the GCC 3 rd edition, 2015															
6.2.1.	The amount of the Performance Guarantee shall be 5% of the Contract Price.															
6.2.1.	The Performance Guarantee shall be delivered within twenty one (21) days from the Commencement date.															
6.5.1.2.3	Day work allowances as tendered in Section M9100 of the Bill of Quantities: Materials at cost plus 15%.															
6.8.2	The value of payment certificates is to be adjusted in accordance with the Contract Price Adjustment Schedule for civil works only, where The value of "x" is 0,150 The values of the co-efficients are: $(1-x) \left[\frac{aLt}{Lo} + \frac{bPt}{Po} + \frac{cMt}{Mo} + \frac{dFt}{Fo} - 1 \right]$ CPA : Projects predominantly: <table style="width: 100%; border: none;"> <tr> <td style="width: 33%;">New Road Construction</td> <td style="width: 33%;">Rehabilitation (major structures only)</td> <td style="width: 33%;">Concrete Work</td> </tr> <tr> <td>a = 0,20</td> <td>0,20</td> <td>0,15</td> </tr> <tr> <td>b = 0,40</td> <td>0,35</td> <td>0,20</td> </tr> <tr> <td>c = 0,25</td> <td>0,35</td> <td>0,55</td> </tr> <tr> <td>d = 0,15</td> <td>0,10</td> <td>0,10</td> </tr> </table>	New Road Construction	Rehabilitation (major structures only)	Concrete Work	a = 0,20	0,20	0,15	b = 0,40	0,35	0,20	c = 0,25	0,35	0,55	d = 0,15	0,10	0,10
New Road Construction	Rehabilitation (major structures only)	Concrete Work														
a = 0,20	0,20	0,15														
b = 0,40	0,35	0,20														
c = 0,25	0,35	0,55														
d = 0,15	0,10	0,10														

Clause	
	<p>“L” is the “Labour Index” and shall be the “Consumer Price Index” for the urban area nearest to the Site as published in the Statistical News Release, of Statistics South Africa. “P” is the “Plant Index” and shall be the “Civil Engineering Plant Index” as published in the Statistical News Release, of Statistics South Africa.. “M” is the “Materials Index” and shall be the “Civil Engineering Materials Index” as published in the Statistical News Release, of Statistics South Africa. “F” is the “Fuel Index” and shall be the “Diesel at wholesale level – Witwatersrand Index” as published in the Statistical News Release, of Statistics South Africa. The suffix “o” denotes the basic indices applicable to the base month, which shall be the month prior to the month in which the closing date for the tender falls. The suffix “t” denotes the current indices applicable to the month in which the last day of the period falls to which the relevant payment certificate relates. If any index relevant to any particular certificate is not known at the time when the certificate is prepared, the Employer’s Agent shall estimate the value of such index. Any correction, which may be necessary when the correct indices become known, shall be made by the Employer’s Agent in subsequent payment certificates. The urban area nearest the site is Marble Hall The base month shall be the month before the closing date of the bid</p>
6.8.3	<p>The following are special materials: Bitumen binder extracted from petroleum based products and used on site, including that used in asphalt, irrespective of whether it is produced and/or placed by the Contractor or an approved subcontractor. The rates and prices for the special materials shall be furnished by the contractor, which rates and prices ex refinery with the base date specified under 6.8.2 and shall exclude VAT but shall include all other obligatory taxes and levies on the basis specified in the contract price adjustment schedule (paragraph 4(i) and 4(ii)).</p>
6.10.1.5	The percentage limit on materials not yet built into the Permanent Works is 80%.
6.10.3	Retention is not applicable to this contract
8.6.1.	The amount to be included in the sum insured to cover the value of the contract
8.6.1.1.2	a) Materials supplied by the employer for incorporation into the works is R0.00
8.6.1.2	The following additional and varied insurances are required: CAR & SASRIA.
8.6.1.3	The Limit of the liability insurance required should not be less than the contract amount.
9.2.1.3.2	Clause 9.2.1.3.2 is replaced by the following “Has failed to submit documentation in time or to submit acceptable documentation”
10.5.2	Disputes are to be referred to ad-hoc adjudication
10.7	Disputes are to be referred for final settlement to arbitration.
Special Clause in terms of RDP	<p>Requirements in terms of government’s reconstruction and development programme. Target values: In this project the minimum target values shall be as follows:</p> <ul style="list-style-type: none"> • SMME’s : 5% of the Contract Sum <p>It is a requirement that the Contractor plan for achieving these targets and that a planned programme for achieving each of the targets is submitted at the start of the project together with the programme of works. Penalties: The penalties for not reaching the required labour target values will be calculated at 100% of the difference between the set target values and the actual values achieved by the contractor when the contract reaches 80% time lapsed.</p>

Part 2: Data provided by the Contractor	
Clause	
1.1.1.9	The name of the Contractor is.....
1.2.1.2	The address of the contractor for receipt of communication is: Physical address: Postal address E-mail address..... Telephone: Facsimile:
1.1.1.4	The time for achieving Practical Completion of the whole of the Works will be determined by the Employer's Representative
6.5.1.2.3	The percentage allowances to cover all charges for the contractor's and subcontractor's profits, timekeeping, clerical work, insurance, establishment, superintendence and the use of hand tools is% (Maximum 15%).
6.8.3	The rate for special materials, exclusive of Value Added Tax is to be completed in Schedule T2.1.20.

PRO FORMA

C1.3 PERFORMANCE GUARANTEE

GUARANTOR DETAILS AND DEFINITIONS

“Guarantor” means:
Physical address:
“Employer” means:
“Contractor” means:
“Employer’s Agent” means:
“Works” means:
“Site” means:
“Contract” means: The Agreement made in terms of the Form of Offer and Acceptance and such amendments or additions to the Contract as may be agreed in writing between the parties.
“Contract Sum” means: The accepted amount inclusive of tax of R
Amount in words:
“Guaranteed Sum” means: The maximum aggregate amount of R
Amount in words:
Type of Performance Guarantee: (*Insert Variable or Fixed*)
“Expiry Date” means: (*Give date*) or any other later date set by the Contractor and/or Employer provided such instruction is received prior to the Expiry Date as indicated here.

1. VARIABLE PERFORMANCE GUARANTEE

1.1 Where a Variable Performance Guarantee has been selected, the Guarantor’s liability shall be limited during the following periods to diminishing amounts of the Guaranteed Sum as follows:

1.1.1 From and including the date of signing the Performance Guarantee up to and including the date of the interim payment certificate certifying, for the first time, more than 50% of the Contract Sum:
R.....

(Amount in words.....)

1.1.2 From the day following the date of the said interim payment certificate up to and including the Expiry Date, or the date of issue by the Employer’s Agent of the Certificate of Completion of the Works, whichever occurs first:

R.....

(Amount in words.....)

1.2 The Employer’s Agent and/or the Employer shall advise the Guarantor in writing of the date on which the interim payment certificate certifying, for the first time, more than 50% of the Contract Sum, has been issued and the date on which the Certificate of Completion of the Works has been issued.

2. FIXED PERFORMANCE GUARANTEE

2.1 Where a Fixed Performance Guarantee has been selected, the Guarantor’s liability shall be limited to the amount of the Guaranteed Sum.

2.2 The Guarantor’s period of liability shall be from and including the date of issue of this Performance Guarantee and up to and including the Expiry Date or the date of issue by the Engineer of the Certificate of Completion of the Works or the date of payment in full of the Guaranteed Sum, whichever occurs first.

2.3 The Employer’s Agent and/or the Employer shall advise the Guarantor in writing of the date on which the Certificate of Completion of the Works has been issued.

3. CONDITIONS APPLICABLE TO VARIABLE AND FIXED PERFORMANCE GUARANTEE

3.1 The Guarantor hereby acknowledges that:

3.1.1 any reference in this Performance Guarantee to the Contract is made for the purpose of convenience and shall not be construed as any intention whatsoever to create an accessory obligation or any intention whatsoever to create a suretyship;

3.1.2 its obligation under this Performance Guarantee is restricted to the payment of money.

3.2 Subject to the Guarantor’s maximum liability referred to in 1.1 or 2.1, the Guarantor hereby undertakes to pay the Employer the sum certified upon receipt of the documents identified in 3.2.1 to 3.2.3:

3.2.1 A copy of a first written demand issued by the Employer to the Contractor stating that payment of a sum certified by the Employer’s Agent in an Interim or Final Payment Certificate has not been made in terms of the

- Contract and failing such payment within seven (7) calendar days, the Employer intends to call upon the Guarantor to make payment in terms of 3.2.2;
- 3.2.2 A first written demand issued by the Employer to the Guarantor at the Guarantor's physical address with a copy to the Contractor stating that a period of seven (7) days has elapsed since the first written demand in terms of 3.2.1 and the sum certified has still not been paid;
- 3.2.3 A copy of the aforesaid payment certificate which entitles the Employer to receive payment in terms of the Contract of the sum certified in 3.2.
- 3.3 Subject to the Guarantor's maximum liability referred to in 1.1 or 2.1, the Guarantor undertakes to pay to the Employer the Guaranteed Sum or the full outstanding balance upon receipt of a first written demand from the Employer to the Guarantor at the Guarantor's physical address calling up this Performance Guarantee, such demand stating that:
- 3.3.1 the Contract has been terminated due to the Contractor's default and that this Performance Guarantee is called up in terms of 3.3; or
- 3.3.2 a provisional or final sequestration or liquidation court order has been granted against the Contractor and that the Performance Guarantee is called up in terms of 3.3; and
- 3.3.3 the aforesaid written demand is accompanied by a copy of the notice of termination and/or the provisional/final sequestration and/or the provisional liquidation court order.
- 3.4 It is recorded that the aggregate amount of payments required to be made by the Guarantor in terms of 3.2 and 3.3 shall not exceed the Guarantor's maximum liability in terms of 1.1 or 2.1.
- 3.5 Where the Guarantor has made payment in terms of 3.3, the Employer shall upon the date of issue of the Final Payment Certificate submit an expense account to the Guarantor showing how all monies received in terms of this Performance Guarantee have been expended and shall refund to the Guarantor any resulting surplus. All monies refunded to the Guarantor in terms of this Performance Guarantee shall bear interest at the prime overdraft rate of the Employer's bank compounded monthly and calculated from the date payment was made by the Guarantor to the Employer until the date of refund.
- 3.6 Payment by the Guarantor in terms of 3.2 or 3.3 shall be made within seven (7) calendar days upon receipt of the first written demand to the Guarantor.
- 3.7 Payment by the Guarantor in terms of 3.3 will only be made against the return of the original Performance Guarantee by the Employer.
- 3.8 The Employer shall have the absolute right to arrange his affairs with the Contractor in any manner which the Employer may deem fit and the Guarantor shall not have the right to claim his release from this Performance Guarantee on account of any conduct alleged to be prejudicial to the Guarantor.
- 3.9 The Guarantor chooses the physical address as stated above for the service of all notices for all purposes in connection herewith.
- 3.10 This Performance Guarantee is neither negotiable nor transferable and shall expire in terms of 1.1.2 or 2.2, where after no claims will be considered by the Guarantor. The original of this Guarantee shall be returned to the Guarantor after it has expired.
- 3.11 This Performance Guarantee, with the required demand notices in terms of 3.2 or 3.3, shall be regarded as a liquid document for the purposes of obtaining a court order.
- 3.12 Where this Performance Guarantee is issued in the Republic of South Africa the Guarantor hereby consents in terms of Section 45 of the Magistrate's Courts Act No 32 of 1944, as amended, to the jurisdiction of the Magistrate's Court of any district having jurisdiction in terms of Section 28 of the said Act, notwithstanding that the amount of the claim may exceed the jurisdiction of the Magistrate's Court.

Signed at

Date

Guarantor's signatory (1)

Capacity.....

Guarantor's signatory (2)

Capacity

Witness signatory (1)

Witness signatory (2)

C1.4 ABSTRACTS OF THE MINE HEALTH AND SAFETY ACT No. 29 OF 1996 AND AMENDMENT ACT No. 72 OF 1997

DEFINITIONS:

Section 102 of the Mine Health and Safety Act refers.

“mine” means, when –

- (a) “used as a noun-
 - (i) any borehole, or excavation, in any tailing or in the earth, including the portion of the earth that is under the sea or other water, made for the purpose of searching for or winning a mineral, whether is being worked or not, or
 - (ii) any other place where a mineral deposit is being exploited, including the mining area and all buildings, structures, machinery, mine dumps, access roads or objects situated on or in that area that are used or intended to be used in connection with searching, winning, exploiting or processing of a mineral, or for health and safety purposes.
- b) used as a verb, the making of any excavation or borehole referred to in paragraph (a) (i), or the exploitation of any mineral deposit in any other manner, for the purpose of winning a mineral including prospecting in connection with the winning of a mineral.
 - a) whether that substance is in solid, liquid or gaseous form;
 - b) that occurs naturally in or on the earth, in or under water or in tailings, and
 - c) that has been formed by or subjected to a geological process.

“processing” means the recovering, extracting, concentrating, refining, calcimining, classifying, crushing, milling, screening, washing, reduction, smelting or gasification or any mineral, and “process” has a similar meaning

“works” means any place, excluding a mine, where any person carries out-

- a) The transmitting and distributing to another consumer of any form of power from a mine, by the owner thereof, to the terminal point of bulk, to the power supply meter on any such other consumer’s premises, or
- b) Training at any central rescue station, or
- c) The making, repairing, re-opening or closing of any subterranean tunnel, or
- d) Any operations necessary in connection with any of the operational listed in this paragraph

EXAMPLE FOR USE BY CONTRACTOR WHEN APPOINTING SUB-ORDINATES IN TERMS OF THE MINE HEALTH AND SAFETY ACT (1996) AS AMENDED. (To be printed on Contractors letter head)

APPOINTMENT IN TERMS OF SUB-ORDINATE MANAGER: REGULATION 2.6.1 IN FORCE IN TERMS OF SCHEDULE 4 OF THE MINE HEALTH AND SAFETY ACT (ACT NO. 29 OF 1996) AS AMENDED BY THE HEALTH SAFETY AMENDMENT ACT (ACT NO. 72 OF 1997)

I, in my capacity as, having been appointed in terms of **Section 3(1)** of the Act (as amended), by the Head of Department of the 'Department of Public Works, Roads & Infrastructure' who is our client, and owner of the Mine(s) to be worked under the requirements of the above mentioned Acts hereby, in terms of **Regulation 2.6.1** of the Act as amended, appoint as Sub-Ordinate Manager of the Contractor, of address, and contact number, on contract no **LDPWRI-ROADS/18010 for ROUTINE MAINTENANCE**

PROJECT: EPHRAIM MOGALE LOCAL MUNICIPALITY IN SEKHUKHUNE DISTRICT

In accordance with the provisions of the Mine Health and Safety Act, 1996 (Act 29 of 1996), you are also appointed in terms of Section 7(2) of the Mine Health and Safety Act, 1996 to perform the following functions, assigned to the Mine Manager in terms of Section 7(1), 10(2) (b) and (c) and 11 (1) in so far as your area of responsibilities are concerned:-

1. You must identify the hazards, assess the risk and record the hazards to health and safety to which employees may be exposed while they are at work, and
2. To the extent that is reasonable, you must ensure that every employee is properly trained:
 - a. In the measures necessary to eliminate, control and minimise those risks to health and safety.
 - b. In the procedures to be followed to perform the employee's work.
3. To the extent that is reasonably practical, you must:-

Ensure that every employee becomes familiar with the work-related hazards and risk and the measures that must be taken to eliminate, control and minimise those hazards and risks.
4. To the extent that is reasonably practical, you must:-

Ensure that every employee under your control complies with the requirements of the Act.

Institutes the measures necessary to secure, maintain and enhance health and safety.

Considers and employees training and capabilities in respect of health and safety before assigning a task to that employee.

Ensure that work is performed under the general supervision of a person trained to understand the hazards associated with the work, and who has the authority to ensure that the precautionary measures laid down by the Manager are implemented.

You will be responsible for the control, management and direction of all the activities and employees connected with work and you are required to ensure that all such activities take place in accordance with the provisions of the Mine Health and Safety Act and the Regulations are complied with.

You are further required to inform the Manager as soon as practicable, of any breach of any provision of these Regulation, to enable him to inform the Principal Inspector of Mines, Department of Minerals and Energy, or take such steps as may be necessary.

Please acquaint yourself with the relevant Regulations, Standards and Procedures, which have a bearing on your appointment. You must ensure that you are fully conversant with the requirements of the Procedures for Reporting Accidents.

.....

Signature

.....

Date

WITNESS NAME (IN CAPITALS):

1..... 1.....

Name

Signature

2..... 2.....

Name

Signature

I,, having been appointed in terms of Regulation 2.6.1 of the act (as amended) to perform all functions entrusted to.....In terms of the Act (as amended) hereby accept the above appointment.

.....

Signature

.....

Date

WITNESS NAME (IN CAPITALS):

1..... 1.....

Name

Signature

2..... 2.....

Name

Signature

**EXAMPLE FOR USE BY CONTRACTOR WHEN APPOINTING SUB-ORDINATES IN TERMS OF THE MINE HEALTH AND SAFETY ACT (1996) AS AMENDED.
(To be printed on Contractors letter head)**

APPOINTMENT AS COMPETANT PERSON IN CHARGE OF MACHINERY IN TERMS OF REGULATION 2.13.2 IN FORCE IN TERMS OF SCHEDULE 4 OF THE MINE HEALTH AND SAFETY ACT (ACT NO. 29 OF 1996) AS AMENDED BY THE HEALTH AND SAFETY AMEDEMMENT ACT (ACT NO. 72 OF 1997)

I, in my capacity as, having been appointed in terms of **Section 3(1)** of the Act (as amended), by the Head of Department of the 'Department of Public Works, Roads & Infrastructure ' who is our client and owner of the Mine(s) to be worked under the requirements of the above mentioned Acts hereby, in terms of **Regulations 2.13.2** of the Act as amended, appoint as Competent Person in charge of machinery for the Contractor, of address and contact number, on all contracts in the Limpopo Province that are undertaken by the contractor.

You are to report any accident to the mine manager immediately and personally visit the scene of the accident without delay.

You must familiarise yourself with the Mine Health and Safety Act and the Minerals Act and the Regulations and ensure that you have a copy in your possession and you must take all reasonable measures to ensure that the provisions of this Act are complied with.

Your attention are further drawn to Regulation 2.13.4.1 as well as the requirements of Chapter 18,20 and 21.

Please confirm this appointment by signing at the bottom.

.....
Signature Date:

WITNESS NAME (IN CAPITALS):

1..... 1.....
Name Signature

2..... 2.....
Name Signature

I,, having been appointed in terms of Regulation 2.13.2 of the act (as amended) to perform all functions entrusted to.....In terms of the Act (as amended) hereby accept the above appointment.

.....
Signature Date:

WITNESS NAME (IN CAPITALS):

1..... 1.....
Name Signature

2..... 2.....
Name Signature

C1.5

**APPOINTMENT OF A CONTRACTOR OHS ACT 85 of 1993, CR 7(1) (c)
AND WRITTEN AGREEMENT ON OCCUPATIONAL HEALTH & SAFETY**

In accordance with the provisions of the applicable legislation;

(Tick **x** in the applicable block)

<input type="checkbox"/>	South Africa	Occupational Health & Safety Act - 85 of 1993 – Section 37(2) & CR (2014), Nema A
<input type="checkbox"/>	South Africa	Mine Health & Safety Act – 29 of 1996
<input type="checkbox"/>	Botswana	Botswana Factories Act – CHAPP 44:01 – BOWEC Regulations
<input type="checkbox"/>	Botswana	Mines, Quarries, Works & Machinery Act – CHAPP 44:02 – Reg 250
<input type="checkbox"/>	Swaziland	Occupational Health & Safety Act – 9 of 2001
<input type="checkbox"/>	Lesotho	Labour Code Order 1992 – Part VII Health, Safety & Welfare at Work Reg 93
<input type="checkbox"/>	Mozambique	Occupational Health & Safety in Industrial Premises – 48/73
<input type="checkbox"/>	Ghana	Occupational Health and Safety and Environmental Legislation
<input type="checkbox"/>	(other)	

THIS MANDATORY AGREEMENT IS ENTERED INTO ON THE

Project Name

BETWEEN

Principal Contractor PUBLIC WORKS, ROADS & INFRASTRUCTURE

(Hereinafter referred to as the Principal Contractor)

AND

Sub Contractor / Contractor Name

(Hereinafter referred to as the Contractor)

1. CONTRACTOR’S MAIN SCOPE OF WORK

1. DEFINITIONS

For the purpose of this Mandatory Agreement any word or expression to which a meaning has been assigned in the Act shall have the meaning so assigned and, unless the context otherwise indicates—

"agent" means a competent person who acts as a representative for a client;

"angle of repose" means the steepest angle of a surface at which a mass of loose or fragmented material will remain stationary in a pile on the surface, rather than sliding or crumbling away;

"bulk mixing plant" means machinery, appliances or other similar devices that are assembled in such a manner so as to be able to mix materials in bulk for the purposes of using the mixed product for construction work;

"client" means any person for whom construction work is being performed;

"competent person" means a person who—

(a) has in respect of the work or task to be performed the required knowledge, training and experience and, where applicable, qualifications, specific to that work or task: Provided that where appropriate qualifications and training are registered in terms of the provisions of the National Qualification Framework Act, 2000 (Act No.67 of 2000), those qualifications and that training must be regarded as the required qualifications and training; and

(b) is familiar with the Act and with the applicable regulations made under the Act;

"construction manager" means a competent person responsible for the management of the physical construction processes and the coordination, administration and management of resources on a construction site;

"construction site" means a work place where construction work is being performed;

"construction supervisor" means a competent person responsible for supervising construction activities on a construction site;

"construction vehicle" means a vehicle used as a means of conveyance for transporting persons or material, or persons and material, on and off the construction site for the purposes of performing construction work;

"construction work" means any work in connection with—

(a) the construction, erection, alteration, renovation, repair, demolition or dismantling of or addition to a building or any similar structure; or

(b) the construction, erection, maintenance, demolition or dismantling of any bridge, dam, canal, road, railway, runway, sewer or water reticulation system; or the moving of earth, clearing of land, the making of excavation, piling, or any similar civil engineering structure or type of work;

"construction work permit" means a document issued in terms of regulation 3;

"contractor" means an employer who performs construction work;

"demolition work" means a method to dismantle, wreck, break, pull down or knock down of a structure or part thereof by way of manual labour, machinery, or the use of explosives;

"design" in relation to any structure, includes drawings, calculations, design details and specifications;

"designer" means—

- (a) a competent person who—
 - (i) prepares a design;
 - (ii) checks and approves a design;
 - (iii) arranges for a person at work under his or her control to prepare a design, including an employee of that person where he or she is the employer; or
 - (iv) designs temporary work, including its components;
- (b) an architect or engineer contributing to, or having overall responsibility for a design;
- (c) a building services engineer designing details for fixed plant;
- (d) a surveyor specifying articles or drawing up specifications;
- (e) a contractor carrying out design work as part of a design and building project; or
- (f) an interior designer, shop-fitter or landscape architect;

"Employer" Means any person who is employed by or works for an employer and who receives or is entitled to receive any remuneration or who works under the direction or supervision of that employer.

"ENV" means Environmental.

"excavation work" means the making of any man-made cavity, trench, pit or depression formed by cutting, digging or scooping;

"explosive actuated fastening device" means a tool that is activated by an explosive charge and that is used for driving bolts, nails and similar objects for the purpose of providing fixing;

"fall arrest equipment" means equipment used to arrest a person in a fall, including personal equipment, a body harness, lanyards, deceleration devices, lifelines or similar equipment;

"fall prevention equipment" means equipment used to prevent persons from falling from a fall risk position, including personal equipment, a body harness, lanyards, lifelines or physical equipment such as guardrails, screens, barricades, anchorages or similar equipment;

"fall protection plan" means a documented plan, which includes and provides for—

- (a) all risks relating to working from a fall risk position, considering the nature of work undertaken;
- (b) the procedures and methods to be applied in order to eliminate the risk of falling; and
- (c) a rescue plan and procedures;

"fall risk" means any potential exposure to falling either from, off or into;

"health and safety file" means a file, or other record containing the information in writing required by these Regulations;

"health and safety plan" means a site, activity or project specific documented plan in accordance with the client's health and safety specification;

"health and safety specification" means a site, activity or project specific document prepared by the client pertaining to all health and safety requirements related to construction work;

"Legislation" means Applicable Legislation as indicated on Page 1.

"Mandatory" Includes an agent, a contractor or a contractor for work, but without derogating from his status in his own right as an employer or a user.

"material hoist" means a hoist used to lower or raise material and equipment, excluding passengers;

"medical certificate of fitness" means a certificate contemplated in regulation 7(1) (8);

"mobile plant" means any machinery, appliance or other similar device that is able to move independently, and is used for the purpose of performing construction work on a construction site;

"National Building Regulations" means the National Building Regulations made under the National Building Regulations and Building Standards Act, 1977 (Act No. 103 of 1977), and promulgated by Government Notice No. R. 2378 of 30 July 1990, as amended by Government Notices No's R. 432 of 8 March 1991, R. 919 of 30 July 1999 and R. 547 of 30 May 2008;

"OHS" means Occupational Health Safety.

"person day" means one normal working shift of carrying out construction work by a person on a construction site;

"principal contractor" means an employer appointed by the client to perform construction work;

"Professional Engineer or Professional Certificated Engineer" means a person holding registration as either a Professional Engineer or Professional Certificated Engineer in terms of the Engineering Profession Act, 2000 (Act No. 46 of 2000);

"Professional Technologist" means a person holding registration as a Professional Engineering Technologist in terms of the Engineering Profession Act, 2000;

"Project" Refers to the contract and has reference to the premises or any part thereof where the work which has been contracted for is to be performed.

"provincial director" means the provincial director as defined in regulation 1 of the General Administrative Regulations, 2003;

"QA" means Quality Assurance.

"scaffold" means a temporary elevated platform and supporting structure used for providing access to and supporting workmen or materials or both;

"shoring" means a system used to support the sides of an excavation and which is intended to prevent the cave-in or the collapse of the sides of an excavation;

"structure" means—

- (a) any building, steel or reinforced concrete structure (not being a building), railway line or siding, bridge, waterworks, reservoir, pipe or pipeline, cable, sewer, sewage works, fixed vessels, road, drainage works, earthworks, dam, wall, mast, tower, tower crane, bulk mixing plant, pylon, surface and underground tanks, earth retaining structure or any structure designed to preserve or alter any natural feature, and any other similar structure;

- (b) any falsework, scaffold or other structure designed or used to provide support or means of access during construction work; or
- (c) any fixed plant in respect of construction work which includes installation, commissioning, decommissioning or dismantling and where any construction work involves a risk of a person falling;

"**suspended platform**" means a working platform suspended from supports by means of one or more separate ropes from each support;

"**temporary works**" means any falsework, formwork, support work, scaffold, shoring or other temporary structure designed to provide support or means of access during construction work;

"**the Act**" means the Occupational Health and Safety Act, 1993 (Act No. 85 of 1993);

"**tunneling**" means the construction of any tunnel beneath the natural surface of the earth for a purpose other than the searching for or winning of a mineral.

2. OBJECTIVE

- 2.1 This agreement, in line with PUBLIC WORKS, ROADS & INFRASTRUCTURE Philosophy of Zero Harm and Accident Prevention, is entered into by the parties in order to identify and stipulate the arrangements and procedures between the **Principal Contractor** and **Contractor** in order to ensure that the **Contractor** and their **Contractors** comply with all the Client **OHS Specification** along with all applicable legislative requirements on the **Project**.
- 2.2 Legislative requirements are mandatory by Law and ignorance of the Law and its regulations are not an excuse. The Contractor and his Contractors shall therefore ensure compliance with all applicable legislative requirements and shall have in their possession a copy of the latest revision as required by Law on this project.
- 2.3 All client contractors to the Principal Contractor are required to have a similar Mandatory Agreement in terms of Section 37(2) of the OHS Act in place and shall ensure it is maintained.

3. INSURANCE

- 3.1 The **Contractor** and his/her contractors warrant that they have the following insurance cover which shall remain in force whilst on the **Project**, or which shall remain in force for the duration of the contractual relationship between the **Contractor** and **Principle Contractor**, whichever period is the longest;
 - a) Compensation Registration covering all occupational injuries and diseases and the cover must be paid up for the duration of the **Project**. Proof of this cover must be provided to the **Principal Contractor** in the form of a **Letter of Good Standing** from either the **Compensation Commissioner** or relevant insurance fund managers.
 - b) Adequate **Public Liability** insurance cover in relation to the work undertaken.
 - c) Any other insurance cover that will adequately make provision for any losses and/or claims arising from its contractors and/or their respective employees and/or omissions whilst on the Project.

4 MANAGEMENT AND SUPERVISION OF CONSTRUCTION WORK

- 4.1 The contractor must in writing appoint one full-time competent person as the **construction manager** with the duty of managing all the construction work on this site, including the duty of ensuring occupational health and safety compliance, and in the absence of the construction manager an alternate must be appointed by the contractor.
- 4.2 The contractor must upon having considered the size of the project, in writing appoint one or more assistant construction managers for different sections thereof: Provided that the designation of any such person does not relieve the construction manager of any personal accountability for failing in his or her management duties in terms of this regulation.
- 4.3 Where the construction manager has not appointed assistant construction managers as contemplated in 4.2, or, in the opinion of Principal Contractor, a sufficient number of such assistant construction managers have not been appointed, the Principal Contractor shall direct the construction manager in writing to appoint the number of assistant construction managers.
- 4.4 No construction manager appointed may manage any construction work on or in any construction site other than the site in respect of which he or she has been appointed.
- 4.5 The contractor must, after consultation with the Principal Contractor and having considered the size of the project, the degree of danger likely to be encountered or the accumulation of hazards or risks on the site, appoint a full-time or part-time Construction Health and Safety Officer in writing to assist in the control of all health and safety related aspects on the site: Provided that, where the question arises as to whether a Construction Health and Safety Officer is necessary, the decision of the Principal Contractor is decisive.
- 4.6 The contractor may not appoint a Construction Health and Safety Officer (CHSO) to assist in the control of health and safety related aspects on the site unless he or she is reasonably satisfied that the Construction Health and Safety Officer that he or she intends to appoint is registered with a statutory body approved by the Chief Inspector and has necessary competencies and resources to assist the contractor.
- 4.7 The Construction Manager must in writing appoint Construction Supervisors responsible for construction activities and ensuring occupational health and safety compliance on the construction site.
- 4.8 The contractor must, upon having considered the size of the project, in writing appoint one or more competent employees for different sections thereof to assist the Construction Supervisor contemplated in 4.7, and every such employee has, to the extent clearly defined by the contractor in the letter of appointment, the same duties as the Construction Supervisor: Provided that the designation of any such employee does not relieve the Construction Supervisor of any personal accountability for failing in his or her supervisory duties in terms of this regulation.
- 4.9 Where the contractor has not appointed an employee as contemplated in 4.8, or, in the opinion of the Principal Contractor, a sufficient number of such employees have not been appointed, the Principal Contractor must instruct the employer to appoint the number of employees indicated by the Principal Contractor, and those employees must be regarded as having been appointed.

- 4.10 No Construction Supervisor appointed under 4.7 may supervise any construction work on or in any construction site other than the site in respect of which he or she has been appointed: Provided that if a sufficient number of competent employees have been appropriately designated under 4.7 on all the relevant construction sites, the appointed Construction Supervisor may supervise more than one site.
- 4.11 The **Contractor's** appointed **Construction Manager** will also be required to attend all scheduled **OHS** meetings on the Project.
- 4.12 The **Contractor** and its contractors shall further ensure that all other legislative appointments are implemented and maintained for the duration of the **Project** and that those employees appointed have the necessary training and experience to meet those requirements.

5. TRAINING

- 5.1 The **Contractor** and its contractors shall ensure that all its employees are adequately trained and experienced to perform their work. Where semi-skilled employees are employed, adequate supervision must be available to maintain standards of work and to ensure compliance with **OHS** standards on the **Project**.
- 5.2 The **Contractor** and its contractors shall ensure that all employees undergo formal **OHS Induction** prior to commencing on the **Project**. This shall include but not be limited to inductions done by the Client, Principal Contractor and Contractors own induction process.
- 5.3 The **Contractor** and its contractors shall ensure that all its employees are in possession of valid licenses and/or certificates of the correct code where machinery or plant is utilised. Proof of these licenses and/or certificates will be kept in the **Contractors OHS File**.
- 5.4 Supervisors shall be required to have attended an OHS Legal Liability course and any other requirement the Client imposes in their OHS specification.
- 5.5 CHS Officers shall be required to have at least 2 years experience in the Health, Safety and Environmental construction field with a minimum of a SAMTRAC (or equivalent) diploma. These CHS Officers are required to be registered with the SACPCMP as required by the OHS Act 85 of 1993, CR 2014. The deadline for such registrations is currently determined as August 2016. There might be additional requirements in the Client OHS specification which needs to be adhered to.
- 5.6 Training certificates of employees (CV's for all Supervisors / Management) and Medical fitness certificates for all employees are required on site in the form of personnel files which shall be audited by the Client and or the Principal Contractor from time to time.
- 5.7 Employees has in respect of the work or task to be performed the required knowledge, training and experience and, where applicable, qualifications, specific to that work or task: Provided that where appropriate qualifications and training are registered in terms of the provisions of the National Qualification Framework Act, 2000 (Act No.67 of 2000), those qualifications and that training must be regarded as the required qualifications and training; and is familiar with the Act and with the applicable regulations made under the Act;

5.8 Training certificates, licences applicable for the type and weight classification of the vehicle being operated and Operator.

6. MEDICAL CERTIFICATE OF FITNESS

6.1 Every person working on the project will have a valid medical certificate of fitness (valid for a year) issued by an Occupational Medical Health Practitioner. The Principal Contractor has a service provider who come to each project to conduct pre arranged Medicals and Contractors are encouraged to utilise these opportunities. The cost for the Medicals shall be for the account of each contractor and it remains the contractor's responsibility to ensure all his / her employees are in possession of valid certificates.

7. ACCIDENT / INCIDENT PROCEDURES

7.1 The **Contractor** and its contractors shall ensure that a sufficient number of trained first aiders are available on site for the duration of the **Project**.

7.2 It is a requirement to have at least one **Level 2** trained First Aider for every 50 employees.

7.3 The **Contractor** and its contractors shall ensure that suitable first aid facilities are provided for the work to be performed. The number of first aid facilities and type of equipment will also be determined by the legislative and **Project** requirements.

7.4 Should the **Contractor** or its contractors utilise the **Principal Contractors** first aid facilities then this needs to be agreed upon in writing. Costs of first aid equipment will then be charged to the **Contractor** at the discretion of the **Principal Contractor**.

7.5 The **Contractor** and its contractors shall ensure that a suitable **Accident Procedure** is drawn up for the duration of the **Project**. This **Accident Procedure** must be submitted to the **Principal Contractor** and must be in line with the Principal Contractor's procedure and contain the names of all emergency contact persons and contact numbers.

7.6 The **Contractor** and its contractors shall ensure that all accidents, incidents, injuries and near misses are reported to the **Principal Contractor** at the soonest convenience as stipulated by the **Principal Contractor**.

7.7 The **Contractor** will be responsible to inform the **(relevant authorities i.e. Department of Labour, Department of Minerals and Energy, etc.)** of any **Serious** or **Reportable Incidents** which may occur in terms of the applicable legislation. All correspondence to the **(Relevant Authorities)** regarding these incidents must be copied and submitted to the **Principle Contractor**.

7.8 The **Contractor** shall ensure that a monthly report is submitted to the **Principle Contractor** and shall contain the following;

- a) Man-hours worked for the relevant month (including its contractors' hours)
- b) No. of work related injuries for the relevant month as well as the classification of the injuries.
- c) Each accident / incident shall be investigated by the Contractor, root causes needs to be determined and the corrective / preventative measures shall be determined by the Root Causes

identified. Corrective / preventative actions shall be formulated and send with the monthly report to the Principal Contractor.

7.9 The Client OHS Specification might have additional requirements which need to be complied with.

8. HEALTH, SAFETY AND ENVIRONMENTAL REPRESENTATIVES

8.1 The **Contractor** and its contractors shall ensure that an adequate number of Health, Safety and Environmental representatives are appointed and trained, as per the requirements of the applicable legislation and/or **Project OHS** requirements. As a guideline one **Health & Safety Representative** should be appointed for every 50 employees.

8.2 The **Contractor** and its contractors shall ensure that regular internal **OHS** meetings are conducted and attended by the appointed **Health & Safety Representative**. The frequency of these meetings must be determined by the work activities performed along with the duration of the **Project**, however at least once every three months.

8.3 The **Contractor** and its contractors shall keep records of these meetings in the **OHS File** along with the attendance records.

8.4 The **Contractor Manager** or his **Health, Safety and Environmental Representatives** shall attend the main **Project OHS** meetings.

8.5 The Client OHS Specification might have additional requirements which need to be complied with.

9. GENERAL ADMINISTRATION / OHS FILE

9.1 ADMINISTRATION

9.1.1 The **Contractor** shall ensure that it has an updated copy of the applicable legislation on the **Project** at all times and that this copy is accessible to all employees.

9.1.2 The **Contractor** and its contractors shall ensure that an **OHS File** is implemented and maintained for the duration of the **Project**. This file must contain all relevant documentation pertaining to **OHS** related issues such as, appointments, risk assessments, accident procedures, incident investigations, training records, registers, check lists, safety meeting minutes and other **OHS** related documentation.

9.1.3 The Principal Contractor shall conduct a Compliance Audit to ensure Compliance with Legislation as well as Client Specifications and Contractor OHS Plan once every 30 days. The results shall be distributed to the Contractor and the Contractor shall be responsible to issue a Corrective Action Plan to the Principal Contractor.

9.1.4 Each Contractor shall ensure that a similar audit as described in 9.1.3 is conducted on all contractors who have been appointed by them at least once every 30 days. The results shall be distributed to the Contractor and the Contractor shall be responsible to issue a Corrective Action Plan to the Principal Contractor.

9.2 MONTHLY PROJECT MAN-HOUR & INJURY REPORT

9.2.1 The **Contractor** is required to submit a formal **Monthly Report of Hours worked and Injuries sustained** to the **Principal Contractor's Project CHS Officer or Construction Manager**.

9.3 SAFETY FILE

9.3.1 The **Contractor** will have and maintain an **OHS file** where all **Administrative requirements** will be kept. At the end of the **Contractor's** contract the **Contractor** will hand over his **completed OHS file** to the **Principle Contractor** who will submit all documentation to the **Client** at the end of the project.

9.3.2 THE FOLLOWING SHOULD BE CONTAINED IN THE CONTRACTORS OHS FILE:

- 9.3.2.1 An updated copy of the applicable legislation
- 9.3.2.2 Updated valid Letter of Good Standing with WCA or FEM
- 9.3.2.3 Clients Safety Specification
- 9.3.2.4 Risk Assessments (quantified and qualified) approved by the Principal Contractor.
- 9.3.2.5 Fall Protection Plan in line with the Principal Contractor's Plan and approved by the Principal Contractor
- 9.3.2.6 OHS Management Plan approved by the Principal Contractor

9.3.3 RECORDS SPECIFIC TO THE PROJECT:

- 9.3.3.1 Issue Based Risk Assessments for all activities.
- 9.3.3.2 DSTI's – daily before any activities start.
- 9.3.3.3 Toolbox Talks – weekly
- 9.3.3.4 Fall Protection Plan
- 9.3.3.5 Mandatory Agreement with Principal Contractor and with appointed Contractors
- 9.3.3.6 Safety Inductions of Employees and Contractor Employees
- 9.3.3.7 Training for Persons Working at Elevated Positions
- 9.3.3.8 Incident Recording & Investigation Procedures and Documents.
- 9.3.3.9 Incident Reports
- 9.3.3.10 Health and Safety Rep. Inspections
- 9.3.3.11 Issue of PPE free of charge to employees – Control Registers
- 9.3.3.12 Safety Meeting Minutes
- 9.3.3.13 Letter of Good Standing from COIDA
- 9.3.3.14 All Registers and Checklists as required by Legislation

9.3.4 APPOINTMENTS (as required by the applicable Legislation)

- 9.3.4.1 Appointment of Manager / Director
- 9.3.4.2 Construction Manager
- 9.3.4.3 Assistant Construction Manager
- 9.3.4.4 Construction H&S Officer
- 9.3.4.5 Construction Supervisor
- 9.3.4.6 Assistant Construction Supervisor
- 9.3.4.7 Risk Assessor
- 9.3.4.8 Fall Protection Planner / Supervisor

- 9.3.4.9 First Aider
- 9.3.4.10 Incident Investigator
- 9.3.4.11 Health and Safety Representative
- 9.3.4.12 Temporary Electrical Installations & Machinery Inspector and Supervisor
- 9.3.4.13 Explosive Actuated Fastening Device Inspector and Operator
- 9.3.4.14 Explosive Actuated Fastening Device Storeman
- 9.3.4.15 Scaffold Supervisor
- 9.3.4.16 Temporary Works Designer
- 9.3.4.17 Temporary Works Supervisor
- 9.3.4.18 Temporary Works Erector
- 9.3.4.19 Temporary Works Equipment Inspector
- 9.3.4.20 Temporary Works Inspector
- 9.3.4.21 Fire Equipment Inspector
- 9.3.4.22 Construction Vehicle and Mobile Plant Operator / Inspector
- 9.3.4.23 Supervisor of Construction Vehicles and Mobile Plant
- 6.3.4.24 Subordinate Construction Vehicle and Mobile Plant Supervisor
- 9.3.4.25 Construction Site Stacking and Storage Supervisor
- 9.3.4.26 Lifting Tackle Inspector
- 9.3.4.27 Lifting Machine Operator
- 9.3.4.28 Lifting Machine Inspector
- 9.3.4.29 Excavation Supervisor and Inspector
- 9.3.4.30 Demolition Supervisor

9.3.5 APPOINTMENTS – SUPERVISORY

9.3.5.1 All legal and client requirements regarding appointments will be adhered to on the project. In all cases the person being appointed will have the necessary training and or experience for the appointed position.

9.3.5.2 The **Contractor** will have an **OHS Appointment Structure** in place. The **CEO** will delegate certain responsibilities down to appointed employees; however he will remain ultimately responsible.

9.3.5.3 Delegation of Duties – Section 16(2). The **Contractor CEO** will appoint his **Managing Director and Contracts Director** who will oversee that all legal, client and company OHS requirements are implemented, adhered to and enforced.

9.3.6 CONSTRUCTION H&S OFFICER

9.3.6.1 Appointment & Functions. The function of the Construction H&S is to assist advice and enforce all OHS issues related to the project. The duties of the Construction H&S Officer will include but will not be limited to stop any **Contractor** who in his/her opinion **works unsafely or poses a threat to any other person.**

9.3.6.2 Weekly OHS Inspection Report. The appointed **Contractor Construction H&S Officer** will be required to formally inspect the project on a weekly basis and all findings will be recorded and distributed to all appointed supervisors, Principal Contractor Site Manager.

9.3.7 HEALTH, SAFETY AND ENVIRONMENTAL REPRESENTATIVES & COMMITTEE MEMBERS

9.3.7.1 As per the legal requirement, the **Contractor** will appoint OHS Representatives & OHS Committee Members on the project. These persons will be nominated by the **Contractor** workforce and will thus represent the workforce in all OHS related issues. All OHS Representatives will be members of the Project OHS Committee and will meet on a monthly basis with the project management to discuss OHS related issues.

9.3.7.2 **Appointments & Functions.** The appointed OHS Representatives and Committee members shall be formally trained in their functions and responsibilities. These will also be clearly defined on their appointment forms.

9.3.7.3 **Monthly Inspection Report.** Each OHS Representative is required to complete a formal monthly inspection report for their respective work areas. These reports are then tabled at the monthly safety meetings for review, however should the need arise an OHS Representative may at any time complete an inspection report and forward it directly onto the appointed Construction Manager. These monthly reports are kept in the **Contractor Safety File** and then archived after the completion of the project.

9.3.8 REGISTERS & CHECKLISTS.

9.3.8.1 In order to ensure that all plant, equipment, systems and procedures are maintained in accordance to **Legislative requirements**, formal inspection **Registers and Checklists** have to be compiled. These **Registers and Checklists** are then completed by the **appointed persons, who are designated in writing**. The completed forms are kept on the **Contractors OHS file** and then archived after project completion.

9.3.8.2 The contractor shall provide the Principal Contractor with a list of all Equipment and Tools he / she intends to use on the project before the equipment / tools are brought onto the site. The Contractor shall make arrangements with the Principal Contractor, Project CHS Officer to inspect the equipment / tools identified on the asset register before the equipment / tools are brought onto the project.

9.3.8.3 The following is a list of **Registers and Checklist required** to be completed for the applicable activities and at intervals as per the requirements of the **Occupational Health and Safety Act 85 of 1993**:

- | | | |
|----------------------------------|---|-------------------------------------|
| a) Equipment / Tool Register | - | Before start of project and monthly |
| b) Portable Electrical Equipment | - | Monthly |
| c) Hand Tools | - | Monthly |
| d) Scaffolding | - | Daily |
| e) Temporary Works
pour | - | Before, during and after a concrete |

f) Fire Extinguishers	-	Monthly
g) Construction Vehicles, Mobile Plant and Equipment	-	Daily
h) Explosive Actuated Fastening Device	-	Monthly
i) Hazardous Chemical Substances	-	Monthly
j) Cranes	-	Daily
k) Slings, Chains & Hooks (Lifting Tackle)	-	Monthly
l) Compressors	-	Monthly
m) Ladders	-	Monthly
n) Hoists	-	Daily
o) Excavations	-	Daily
p) Suspended Scaffolding	-	Daily
q) Gas Welding / Flame Cutting	-	Monthly
r) Full Body Safety Harnesses	-	Monthly
s) Distribution Boards	-	Monthly
t) First Aid Boxes	-	Weekly
u) PPE	-	Monthly

9.3.9 SAFETY INDUCTION AND IDENTIFICATION

9.3.9.1 The **Contractor** shall ensure that all his employees and visitors will first go to the **Principal Contractors CHS Officer or Construction Manager** for a **Site Safety Induction**, before the persons will be allowed onto the construction site. The Contractor shall keep a copy of all the signed General OHS Induction forms on his OHS File. Failure to comply will result in a fine imposed onto the **Contractor**.

9.3.9.2 The **Contractor** shall ensure that his employees are issued with some sort of identification, i.e. Contractor name on Overalls, Hardhats or ID cards will be acceptable.

9.3.10 RISK ASSESSMENTS AND SAFETY TALKS (TOOLBOX TALKS)

9.3.10.1 The Client shall provide a Baseline Risk assessment for all activities associated with the project. The Contractor shall provide Issue based Risk Assessments for all relevant activities identified in the Baseline Risk Assessment. Safe methods of work documents shall be completed for all medium, high and extremely high risks identified. The Contractors shall maintain safe working conditions and a healthy work environment at all times.

9.3.10.2 A daily Safety Task Instruction (DSTI) shall be completed as part of the Risk Assessment Process and the daily conditions shall be taken into consideration when these are conducted by the supervisor / foreman on site.

- 9.3.10.3 All Risk assessments shall be communicated to the employees of the contractor by the contractor before work starts.
- 9.3.10.4 When activities change the contractor will be required to revise the risk assessment to suit the changed conditions and re communicate the revised risk assessment with the employees.
- 9.3.10.5 Copies of all risk assessments will be issued to the **Principal Contractor Project CHS Officer or Construction Manager** for review and these will include copies where the **Contractor's** employees have signed confirmation of receiving the risk assessment information.
- 9.3.10.6 It is a requirement by law that all issue based Risk Assessments is revised monthly. The Contractor shall demonstrate to the Principal Contractor that this is done monthly.
- 9.3.10.7 The **Contractor** is required to have a **Weekly Safety Talk (Toolbox Talk)** with his employees to inform them of safety issues related to their scope of work. The employees of the **Contractor** will sign acknowledgement of receiving the training and copies of the documents shall be kept on the **Contractor OHS file** and copies will be issued to the **Principal Contractor Project CHS Officer or Construction Manager**.
- 9.3.10.8 **Risk Assessor Appointment & Functions.** The risk assessment process will be co-ordinated by a **Contractor Appointed Risk Assessor**. This person will oversee all risk assessments which will include the approval by the **Principal Contractor**. Further to the above, the **Risk Assessor** will ensure that all **Appointed Contractor Supervisors** convey the information on the risk assessments to the respective work crews and the **Contractor** employees sign an Attendance Register.
- 9.3.10.9 The contractor must, before the commencement of any construction work and during such construction work, have risk assessments performed by a competent person appointed in writing, which risk assessments form part of the health and safety plan to be applied on the site, and must include—
- (a) the identification of the risks and hazards to which persons may be exposed to;
 - (b) an analysis and evaluation of the risks and hazards identified based on a documented method;
 - (c) a documented plan and applicable safe work procedures to mitigate, reduce or control the risks and hazards that have been identified;
 - (d) a monitoring plan; and
 - (e) a review plan.
- 9.3.10.10 The contractor must ensure that as far as is reasonably practicable, ergonomic related hazards are analyzed, evaluated and addressed in a risk assessment.
- 9.3.10.11 The contractor must ensure that all employees under his or her control are informed, instructed and trained by a competent person regarding any hazard and the related work procedures and or control measures before any work commences, and thereafter at the times determined in the risk assessment monitoring and review plan of the relevant site.
- 9.3.10.12 The principal contractor must ensure that all his/her contractors are informed regarding any hazard that is stipulated in the risk assessment before any work commences, and thereafter at

the times that may be determined in the risk assessment monitoring and review plan of the relevant site.

- 9.3.10.13 The contractor must consult with the health and safety committee or, if no health and safety committee exists, with a representative trade union or representative group of employees, on the monitoring and review of the risk assessments of the relevant site.
- 9.3.10.14 The contractor must ensure that copies of the risk assessments of the relevant site are available on site for inspection by an inspector, the client, the client's agent, any contractor, any employee, a representative trade union, a health and safety representative or any member of the health and safety committee.
- 9.3.10.15 The contractor must review the relevant risk assessment—
- (a) where changes are effected to the design and or construction that result in a change to the risk profile; or
 - (b) when an incident has occurred.

9.3.11 OHS MEETINGS

- 9.3.11.1 Monthly OHS meetings with all OHS Representatives and other committee members will be conducted for the contract. Depending on the scope of work, monthly OHS Contractor meetings will also be conducted to discuss OHS related matters.
- 9.3.11.2 The project OHS meetings are formalised with a standard agenda, however each project may adapt the standard agenda to meet either client requirements or joint venture requirements. Minutes must be kept for each meeting and distributed to each member. As with all OHS documentation these are filed on the Contractor Safety files for viewing by either the Principal Contractor or Client or Officials from the Dept of Labour.
- 9.3.11.3 All persons attending OHS meetings are required to sign a standard attendance register as proof of attendance.
- 9.3.11.4 Contractor Supervisor Meetings. It might be required by the Principal Contractor to have safety meeting with the supervisors of the Contractors when the need arise or if the Principle contractor see it fit to have meetings.

9.3.12 ACCIDENT PROCEDURES

- 9.3.12.1 **Standard Accident Procedure.** Fully equipped first aid boxes along with applicable signage must be placed in prominent areas on the project. All incident investigations will be conducted by either the **Contractor Construction Health and Safety Officer**, appointed investigator or appointed **Contractor OHS Representative**.
- 9.3.12.2 **First Aider Appointment & Functions.** Each trained First Aider must be appointed in writing and responsibilities should be in writing on the appointment form.
- 9.3.12.3 **Name List of First Aiders.** To promote the awareness of the trained First Aiders, their names and work areas shall be displayed in all prominent areas.
- 9.3.12.4 **Emergency Evacuation Procedure.** A **Standard Emergency Evacuation Procedure** must be developed by the **Contractor** in accordance with the **Emergency Evacuation Procedure** of the

Principal Contractor. A **Clients** specific **Evacuation Procedure** will take preference over the standard evacuation procedure. Details of the **Emergency Evacuation Procedure** will be displayed in all prominent work areas.

- 9.3.12.5 The Contractor shall demonstrate to the Principal Contractor that at least two Emergency Evacuation Drills has been conducted during a year and shall also keep record of these drills with the short comings and remedial actions taken.
- 9.3.12.6 To promote the awareness of the emergency numbers the lists will also be displayed in all prominent areas.
- 9.3.12.7 **Employers Report of Accident Forms.** In the unfortunate case of a person being injured and requiring medical attention, then the standard “**Employers Report of Accident**” form will be completed accordingly. Sufficient blank copies will be kept at the Contractors offices. As per the accident procedure copies will be sent to the medical practitioner and relevant company Head Office. A copy will also be kept on the **Contractor Safety file**.
- 9.3.12.8 **Investigation Form (Annexure 1).** Each incident involving medical attention from either a doctor or hospital will be fully investigated on an **Annexure 1** form. This form entails input from all parties namely the investigator, OHS Committee and project management. Each investigation will be reviewed at the monthly OHS meeting. Once actioned the Annexure 1 form will be kept on the Contractor OHS File. If required the client will be notified immediately and a copy handed over.
- 9.3.12.9 **Serious & Reportable Incidents.** The **Contractor** will immediately inform the **Principal Contractor** of any serious or fatal accident which occur. **In the case of a Fatality the Contractor will also inform the Authorities (Department of Labour or the Department of Minerals and Energy in RSA) for their investigation.**

10. CONSTRUCTION ACTIVITIES

10.1 PORTABLE ELECTRIC TOOLS

- 10.1.1 No Contractor will allow any employee to work with unsafe or damaged portable electric tools. All tools will be inspected before it is issued to employees. Any contractor who does not conform to this requirement will be fined and the tool confiscated until it is made safe to use by the contractor. All rotating parts will be sufficiently guarded to protect employees. Tools may only be used by competent/trained persons.

10.2 SCAFFOLDING

- 10.2.1 No contractor will allow any employee to work on unsafe or damaged scaffolding. Scaffolding will be inspected daily and after inclement weather by a competent appointed person. No work will be allowed on scaffolds during inclement weather conditions. Scaffolds will be fitted with a sign at the access to the Scaffold to indicate if it is safe or unsafe to use. Scaffolds will be constructed to SANS 10085 standards and OHS Act 85 of 1993 regulations.
- 10.2.2 The contractor must appoint a competent person in writing who must ensure that all scaffolding work operations are carried out under his or her supervision and that all scaffold erectors, team leaders and inspectors are competent to carry out their work.

10.3 **LADDERS**

10.3.1 No contractor will allow any employee to work on unsafe or damaged ladders. No person will be allowed to stand and work on the last 2 Rungs of any ladder. When the ladder is longer than 3m then another person will hold the ladder in place at the bottom and the ladder will also be tied to a solid structure at the top where possible. Ladders will be inspected visually before shift starts and monthly on a register. Ladders are access equipment and not working platforms.

10.4 **PPE (Personal Protective Equipment)**

10.4.1 Compulsory PPE are Hardhats, Safety boots and overalls. Any other PPE required will be determined by the Risk Assessment. PPE will be issued to employees free of charge and a signed register will be kept by the contractor to proof that PPE has been issued to the employee. Only full body, double lanyard safety harnesses will be allowed to be used by employees who are working on any unprotected heights. These harnesses must carry the SABS stamp of approval. PPE will comply with relevant SABS and OHS Act 85 of 1993 regulations. PUBLIC WORKS, ROADS & INFRASTRUCTURE has request the Contractors who need to purchase new harnesses to purchase harnesses which has a foot strap as part of the harness and to phase out harnesses which are not fitted with foot straps.

10.5 **FALL PROTECTION**

10.5.1 A detailed fall protection plan will be submitted by the contractor to Principal Contractor for approval. A competent person will be appointed in writing to control and oversee all work being conducted by the contractor.

10.5.2 **Contractors** working on heights will take precautions to prevent tools, equipment and employees from accidentally falling from heights. Where it can be prevented no person will work above other employees unless there is sufficient guarding protecting the employees below.

10.5.3 The contractor must—

- (a) designate a competent person to be responsible for the preparation of a fall protection plan;
- (b) ensure that the fall protection plan contemplated in paragraph (10.5.1) is implemented, amended where and when necessary and maintained as required; and
- (c) take steps to ensure continued adherence to the fall protection plan.

10.5.4 A fall protection plan must include—

- (a) a risk assessment of all work carried out from a fall risk position and the procedures and methods used to address all the risks identified per location;
- (b) the processes for the evaluation of the employees' medical fitness necessary to work at a fall risk position and the records thereof;
- (c) a programme for the training of employees working from a fall risk position and the records thereof;

- (d) the procedure addressing the inspection, testing and maintenance of all fall protection equipment; and
- (e) a rescue plan detailing the necessary procedure, personnel and suitable equipment required to affect a rescue of a person in the event of a fall incident to ensure that the rescue procedure is implemented immediately following the incident.

10.5.5 The contractor must ensure that a construction manager appointed under regulation 8(1) is in possession of the most recently updated version of the fall protection plan.

10.5.6 The contractor must ensure that—

- (a) all unprotected openings in floors, edges, slabs, hatchways and stairways are adequately guarded, fenced or barricaded or that similar means are used to safeguard any person from falling through such openings;
- (b) no person is required to work in a fall risk position, unless such work is performed safely
- (c) fall prevention and fall arrest equipment are—
 - (i) approved as suitable and of sufficient strength for the purpose for which they are being used, having regard to the work being carried out and the load, including any person, they are intended to bear; and
 - (ii) securely attached to a structure or plant, and the structure or plant and the means of attachment thereto are suitable and of sufficient strength and stability for the purpose of safely supporting the equipment and any person who could fall; and
- (d) fall arrest equipment is used only where it is not reasonably practicable to use fall prevention equipment.

10.5.7 Where roof work is performed, the contractor must ensure that,

- (a) the roof work has been properly planned;
- (b) the roof erectors are competent to carry out the work;
- (c) no employee is permitted to work on roofs during inclement weather conditions or if any conditions are hazardous to the health and safety of the employee;
- (d) all covers to openings and fragile material are of sufficient strength to withstand any imposed loads;
- (e) suitable and sufficient platforms, coverings or other similar means of support have been provided to be used in such a way that the weight of any person passing across or working on or from fragile material is supported; and
- (f) suitable and sufficient guard-rails, barriers and toe-boards or other similar means of protection prevent, as far as is reasonably practicable, the fall of any person, material or equipment.

10.6 HOUSEKEEPING AND GENERAL SAFEGUARDING ON CONSTRUCTION SITES

10.6.1 Housekeeping of the contractors work area will be the responsibility of the contractor. Housekeeping will be done throughout the day to prevent any material or tools obstructing the walkways of the employees. Daily cleaning of the work area will be done near the end of the shift.

10.6.2 Further to this the following must be addressed;

- a) adequate care is taken to ensure correct storage and stacking of articles and material.
- b) regular refuse removal is maintained.
- c) the working area around machinery is clean and demarcated.
- d) no articles or material are disposed from any height without the necessary precautions taken.
- e) spillages of hazardous chemicals are left unattended.

10.6.3 The **Principal Contractor** reserves the right to clean up after any **Contractor** who fails to adhere to these requirements and to charge the **Contractor** accordingly.

10.6.4 The Client OHS Specification might have additional requirements which need to be complied with.

10.6.5 The contractor must, in addition to compliance with the Environmental Regulations, ensure that suitable housekeeping is continuously implemented on each construction site, including—

- (a) the proper storage of materials and equipment;
- (b) the removal of scrap, waste and debris at appropriate intervals;
- (c) ensuring that materials required for use, are not placed on the site so as to obstruct means of access to and egress from workplaces and passageways;
- (d) ensuring that materials which are no longer required for use, do not accumulate on and are removed from the site at appropriate intervals;
- (e) ensuring that waste and debris are not disposed of from a high place with a chute, unless the chute complies with the requirements set out in the Environmental Legislation applicable to country;
- (f) ensuring that construction sites in built-up areas adjacent to a public way are suitably and sufficiently fenced off and provided with controlled access points to prevent the entry of unauthorized persons; and
- (g) ensuring that a catch platform or net is erected above an entrance or passageway or above a place where persons work or pass under, or fencing off the danger area if work is being performed above such entrance, passageway, or place so as to ensure that all persons are kept safe in the case of danger or possibility of persons being struck by falling objects.

10.7 MACHINERY

10.7.1. The **Contractor** and its contractors shall ensure that all the plant, machinery or equipment they wish to utilise on the **Project** is of sound order and fit for the purpose for which it is intended and that it complies with all applicable legislative requirements.

- 10.7.2. The **Contractor** and its contractors shall ensure that all plant, machinery or equipment is suitably guarded by means of insulation, fencing, screening, or guarding. Further to this, all safety equipment in relation to the plant, machinery or equipment is in a suitable and working condition.
- 10.7.3. The **Contractor** and its contractors shall ensure that all employees operating or utilising such plant, machinery or equipment are suitable trained, experienced and are aware of the dangers involved.
- 10.7.4. The **Contractor** and its contractors shall not permit uncertified employees from working on moving or electrically alive machinery. **Isolation Procedures** shall be adhered to by all.
- 10.7.5. Devices to start and stop machinery must be clearly labelled and in working order on all plant, machinery and equipment. Warning signs of relevant dangers must also be clearly visible.
- 10.7.6. The Contractor shall comply with the PUBLIC WORKS, ROADS & INFRASTRUCTURE FRS (Fatal Risk Standards).
- 10.7.7. The Client OHS Specification might have additional requirements which need to be complied with.
- 10.7.8. No plant and equipment shall be allowed on site without being checked and approved by the Principal Contractor.

10.8 STRUCTURES

10.8.1 The contractor must ensure that—

- (a) all reasonably practicable steps are taken to prevent the uncontrolled collapse of any new or existing structure or any part thereof, which may become unstable or is in a temporary state of weakness or instability due to the carrying out of construction work;
- (b) no structure or part of a structure is loaded in a manner which would render it unsafe; and
- (c) all drawings pertaining to the design of the relevant structure are kept on site and are available on request to an Inspector, Principal Contractor, other Contractors, the Client and the Client's Agent or Employee.

10.8.2 An owner of a structure must ensure that—

- (a) inspections of that structure are carried out periodically by competent persons in order to render the structure safe for continued use;
- (b) that the inspections contemplated in paragraph (a) are carried out at least once every six months for the first two years and thereafter yearly;
- (c) the structure is maintained in such a manner that it remains safe for continued use;
- (d) the records of inspections and maintenance are kept and made available on request to an inspector.

10.9 TEMPORARY WORKS

- 10.9.1 The contractor must appoint a temporary works designer in writing to design, inspect and approve the erected temporary works on site before use.
- 10.9.2 The contractor must ensure that all temporary works operations are carried out under the supervision of a competent person who has been appointed in writing for that purpose.
- 10.9.3 The contractor must ensure that—
- (a) all temporary works structures are adequately erected, supported, braced and maintained by a competent person so that they are capable of supporting all anticipated vertical and lateral loads that may be applied to them, and that no loads are imposed onto the structure that the structure is not designed to withstand;
 - (b) all temporary works structures are done with close reference to the structural design drawings, and where any uncertainty exists the structural designer should be consulted;
 - (c) detailed activity specific drawings pertaining to the design of temporary works structures are kept on the site and are available on request to an inspector, other contractors, the client, the client's agent or any employee;
 - (d) all persons required to erect, move or dismantle temporary works structures are provided with adequate training and instruction to perform those operations safely;
 - (e) all equipment used in temporary works structure are carefully examined and checked for suitability by a competent person, before being used;
 - (f) all temporary works structures are inspected by a competent person immediately before, during and after the placement of concrete, after inclement weather or any other imposed load and at least on a daily basis until the temporary works structure has been removed and the results have been recorded in a register and made available on site;
 - (g) no person may cast concrete, until authorization in writing has been given by the competent person contemplated in paragraph (a);
 - (h) if, after erection, any temporary works structure is found to be damaged or weakened to such a degree that its integrity is affected, it is safely removed or reinforced immediately;
 - (i) adequate precautionary measures are taken in order to—
 - (i) secure any deck panels against displacement; and
 - (ii) prevent any person from slipping on temporary works due to the application of release agents;
 - (j) as far as is reasonably practicable, the health of any person is not affected through the use of solvents or oils or any other similar substances;
 - (k) upon casting concrete, the temporary works structure is left in place until the concrete has acquired sufficient strength to safely support its own weight and any imposed load, and is not

removed until authorization in writing has been given by the competent person contemplated in paragraph (a);

- (l) the foundation conditions are suitable to withstand the loads caused by the temporary works structure and any imposed load in accordance with the temporary works design.
- (m) provision is made for safe access by means of secured ladders or staircases for all work to be carried out above the foundation bearing level;
- (n) a temporary works drawing or any other relevant document includes construction sequences and methods statements;
- (o) the temporary works designer has been issued with the latest revision of any relevant structural design drawing;
- (p) a temporary works design and drawing is used only for its intended purpose and for a specific portion of a construction site; and
- (q) the temporary works drawings are approved by the temporary works designer before the erection of any temporary works.

10.9.4 No contractor may use a temporary works design and drawings for any work other than its intended purpose.

10.10 EXCAVATIONS

10.10.1 Excavations will be barricaded with solid barricading i.e. pipes and orange snow netting. Excavations will be barricaded in such a way that it will prevent any person from falling into the excavations (at least 1m from the edge). There will be safe access into the excavation via a ladder which will protrude 1m above ground level. These ladders will be placed at intervals not exceeding 6m from any worker inside the excavation. All excavations will be shored or battered to prevent accidental collapse of ground. All excavated material will be placed at least 1,5m away from the sides of the excavation. Where there is vehicles travelling in the area a burm will be placed around the edges at 1,5m away from the excavation to prevent vehicles accidentally driving too close to the excavation. All excavations will be inspected daily by a competent, appointed person and findings will be recorded on an appropriate register / checklist. No contractor will allow his employees to work inside any excavation while a TLB or Excavator is busy excavating the same excavation. Excavations will be kept free of any toxic or explosive gases. Excavations will be kept well ventilated at all times.

10.10.2 The contractor must—

- (a) ensure that all excavation work is carried out under the supervision of a competent person who has been appointed in writing for that purpose; and
- (b) evaluate, as far as is reasonably practicable, the stability of the ground before excavation work begins.

10.10.3 The contractor who performs excavation work—

- a) must take reasonable and sufficient steps in order to prevent, as far as is reasonably practicable, any person from being buried or trapped by a fall or dislodgement of material in an excavation;
- b) may not require or permit any person to work in an excavation which has not been adequately shored or braced: Provided that shoring and bracing may not be necessary where—
 - (i) the sides of the excavation are sloped to at least the maximum angle of repose measured relative to the horizontal plane; or
 - (ii) such an excavation is in stable material: Provided that—
 - (aa) permission has been given in writing by the appointed competent person contemplated in subregulation (1) upon evaluation by him or her of the site conditions; and
 - (bb) where any uncertainty pertaining to the stability of the soil still exists, the decision from a professional engineer or a professional technologist competent in excavations is decisive and such a decision must be noted in writing and signed by both the competent person contemplated in subregulation (1) and the professional engineer or technologist, as the case may be;
- c) must take steps to ensure that the shoring or bracing contemplated in paragraph (b) is designed and constructed in a manner that renders it strong enough to support the sides of the excavation in question;
- d) must ensure that no load, material, plant or equipment is placed or moved near the edge of any excavation where it may cause its collapse and consequently endangers the safety of any person, unless precautions such as the provision of sufficient and suitable shoring or bracing are taken to prevent the sides from collapsing;
- e) must ensure that where the stability of an adjoining building, structure or road is likely to be affected by the making of an excavation, steps are taken to ensure the stability of such building, structure or road and the safety of persons;
- f) must cause convenient and safe means of access to be provided to every excavation in which persons are required to work, and such access may not be further than six meters from the point where any worker within the excavation is working;
- g) must ascertain, as far as is reasonably practicable, the location and nature of electricity, water, gas or other similar services which may in any way be affected by the work to be performed, and must before the commencement of excavation work that may affect any such service, take the steps that are necessary to render the circumstances safe for all persons involved;

- h) must ensure that every excavation, including all bracing and shoring, is inspected—
 - i) daily, prior to the commencement of each shift;
 - ii) after every blasting operation;
 - iii) after an unexpected fall of ground;
 - iv) after damage to supports; and
 - v) after rain,
 - by the competent person contemplated in subregulation (1), in order to ensure the safety of the excavation and of persons, and those results must be recorded in a register kept on site and made available on request to an inspector, the client, the client's agent, any other contractor or any employee;
- i) must cause every excavation which is accessible to the public or which is adjacent to public roads or thoroughfares, or whereby the safety of persons may be endangered, to be—
 - i) adequately protected by a barrier or fence of at least one metre in height and as close to the excavation as is practicable; and
 - ii) provided with warning illuminates or any other clearly visible boundary indicators at night or when visibility is poor,
 - or have resort to any other suitable and sufficient precautionary measure where subparagraphs (i) and (ii) are not practicable;
- j) must ensure that all precautionary measures stipulated for confined spaces as determined in the Legislation are complied with by any person entering any excavation;
- k) must, where the excavation work involves the use of explosives, appoint a competent person in the use of explosives for excavation, and must ensure that a method statement is developed by that person in accordance with the applicable explosives legislation; and
- l) must cause warning signs to be positioned next to an excavation within which or where persons are working or carrying out inspections or tests.

10.11 DEMOLITION WORK

10.11.1 The contractor must appoint a competent person in writing to supervise and control all demolition work on site.

10.11.2 The contractor must ensure that before any demolition work is carried out, and in order to ascertain the method of demolition to be used, a detailed structural engineering survey of the structure to be demolished is carried out by a competent person and that a method statement on the procedure to be followed in demolishing the structure is developed by that person.

10.11.3 During a demolition, the competent person contemplated in subregulation (10.11.1) must check the structural integrity of the structure at intervals determined in the method statement contemplated in subregulation (10.11.2), in order to avoid any premature collapses.

10.11.4 The contractor who performs demolition work must—

- (a) with regard to a structure being demolished, take steps to ensure that—
 - (i) no floor, roof or other part of the structure is overloaded with debris or material in a manner which would render it unsafe;
 - (ii) all reasonably practicable precautions are taken to avoid the danger of the structure collapsing when any part of the framing of a framed or partly framed building is removed, or when reinforced concrete is cut; and
 - (iii) precautions are taken in the form of adequate shoring or other means that may be necessary to prevent the accidental collapse of any part of the structure or adjoining structure;
- (b) ensure that no person works under overhanging material or a structure which has not been adequately supported, shored or braced;
- (c) ensure that any support, shoring or bracing contemplated in paragraph (b), is designed and constructed so that it is strong enough to support the overhanging material;
- (d) where the stability of an adjoining building, structure or road is likely to be affected by demolition work on a structure, take steps to ensure the stability of such structure or road and the safety of persons;
- (e) ascertain as far as is reasonably practicable the location and nature of electricity, water, gas or other similar services which may in any way be affected by the work to be performed, and must before the commencement of demolition work that may affect any such service, take the steps that are necessary to render circumstances safe for all persons involved;
- (f) cause every stairwell used and every floor where work is being performed in a building being demolished, to be adequately illuminated by either natural or artificial means;
- (g) cause convenient and safe means of access to be provided to every part of the demolition site in which persons are required to work; and
- (h) erect a catch platform or net above an entrance or passageway or above a place where persons work or pass under, or fence off the danger area if work is being performed above such entrance, passageway, or place so as to ensure that all persons are kept safe where there is a danger or possibility of persons being struck by falling objects.
- (i) The demolition area shall be well barricaded with relevant warning signs displayed on the barricading to prevent any unauthorised person to enter the demolition area

10.11.5 The contractor must ensure that no material is dropped to any point, which falls outside the exterior walls of the structure, unless the area is effectively protected.

10.11.6 No person may dispose of waste and debris from a high place by a chute unless the chute—

- a) is adequately constructed and rigidly fastened;
- b) if inclined at an angle of more than 45 degrees to the horizontal, is enclosed on its four sides;
- c) if of the open type, is inclined at an angle of less than 45 degrees to the horizontal;
- d) where necessary, is fitted with a gate at the bottom end to control the flow of material; and
- e) discharges into a container or an enclosed area surrounded by barriers.

10.11.7 The contractor must ensure that every chute used to dispose of rubble is designed in such a manner that rubble does not free-fall and that the chute is strong enough to withstand the force of the debris travelling along the chute.

10.11.8 The contractor must ensure that no equipment is used on floors or working surfaces, unless such floors or surfaces are of sufficient strength to support the imposed loads.

10.11.9 Where a risk assessment indicates the presence of asbestos, the contractor must ensure that all asbestos related work is conducted in accordance with the applicable Legislation.

10.11.10 Where a risk assessment indicates the presence of lead, the contractor must ensure that all lead related work is conducted in accordance with the applicable Legislation.

10.11.11 Where the demolition work involves the use of explosives, a method statement must be developed in accordance with the applicable explosives legislation, by an appointed person who is competent in the use of explosives for demolition work and all persons involved in the demolition works must adhere to demolition procedures issued by the appointed person.

10.11.12 The contractor must ensure that all waste and debris are as soon as reasonably practicable removed and disposed of from the site in accordance with the applicable legislation.

10.11.13 Demolition work will be done under supervision of a competent person.

10.11.14 Dust will be minimised to an acceptable standard. When working with Compressors and Jack hammers, the contractor will ensure that all couplings are safeguarded with safety chains over the couplings.

10.11.15 All service lines will be detected before the work starts and all service lines will be secured by competent persons before work commence.

10.12 TUNNELING

10.12.1 No person may enter a tunnel, which has a height dimension of less than 800 millimetres.

10.13 SUSPENDED PLATFORMS

10.13.1 The contractor must appoint a competent person in writing who must ensure that all suspended platforms work operations are carried out under his or her supervision and that all suspended platform erectors, operators and inspectors are competent to carry out their work.

10.13.2 No contractor may use or permit the use of a suspended platform, unless—

- a) the design, stability and construction thereof comply with the safety standards incorporated for this purpose into the applicable Legislation
- b) he or she is in possession of a certificate of system design issued by a professional engineer, certificated engineer or a professional technologist for the use of the suspended platform system; and
- c) he or she is, before the commencement of the work, in possession of an operational compliance plan developed by a competent person based on the certificate of system design contemplated in subparagraph (b) and applicable to the environment in which the system is being used, which operational compliance plan must include proof of the—
 - i. appointment of the competent person contemplated in subregulation (10.13.1);
 - ii. competency of erectors, operators and inspectors;
 - iii. operational design calculations, which must comply with the requirements of the system design certificate;
 - iv. performance test results;
 - v. sketches indicating the completed system with the operational loading capacity of the platform;
 - vi. procedures for and records of inspections having been carried out; and
 - vii. procedures for and records of maintenance work having been carried out.

10.13.3 The contractor making use of a suspended platform system must submit a copy of the certificate of system design contemplated in subregulation (10.13.2) (b), including a copy of the operational design calculations contemplated in subregulation 10.13.2(c) (iii), sketches and test results, to the provincial director before commencement of the use of the system and must further indicate the intended type of work that the system will be used for.

10.13.4 The contractor must submit a copy of the certificate of system design in the manner contemplated in subregulation (10.13.3) for every new project.

10.13.5 The contractor must ensure that the outriggers of each suspended platform—

- a) are constructed of material of adequate strength and have a safety factor of at least four in relation to the load it is to carry; and
- b) have suspension points provided with stop devices or other effective devices at the outer ends to prevent the displacement of ropes.

10.13.6 The contractor must ensure that—

- a) the parts of the building or structure on which the outriggers of a suspended platform are supported, are checked by means of calculations to ensure that the required safety factor is adhered to without risk of damage to the building or structure;

- b) the suspension wire rope and the safety wire rope are separately connected to the outrigger;
- c) each person on a suspended platform is provided with and wears a body harness as a fall prevention device, which must at all times be attached to the suspended platform;
- d) the hand or power driven machinery to be used for the lifting or lowering of the working platform of a suspended platform is constructed and maintained in such a manner that an uncontrolled movement of the working platform cannot occur;
- e) the machinery referred to in paragraph (d) is so situated that it is easily accessible for inspection;
- f) the rope connections to the outriggers are vertically above the connections to the working platform; and
- g) when the working platform is suspended by two ropes only, the connections of the ropes to the working platform are of a height above the level of the working platform to ensure the stability of the working platform.

10.13.7 The contractor must ensure that a suspended platform—

- a) is suspended as near as possible to the structure to which work is being done to prevent as far as is reasonably practicable horizontal movement away from the face of the structure;
- b) is fitted with anchorage points to which workers must attach the lanyard of the safety harness worn and used by the worker, and such anchorage connections must have sufficient strength to withstand any potential load applied to it; and
- c) is fitted with a conspicuous notice easily understandable by all workers working with the suspended platform, showing—
 - (i). the maximum mass load;
 - (ii). the maximum number of persons; and
 - (iii). the maximum total mass load, including load and persons, which the suspended platform can carry.

10.13.8 The contractor must cause—

- a) the whole installation and all working parts of a suspended platform to be thoroughly examined by a competent person in accordance with the manufacturer's specification;
- b) the whole installation to be subjected to a performance test as determined by the standard to which the suspended platform was manufactured;
- c) the performance test contemplated in paragraph (b) to be done by a competent person appointed in writing, with the knowledge and experience of erection and maintenance of suspended platforms or similar machinery, and who must determine the serviceability of the structures, ropes, machinery and safety devices before they are used, every time suspended platforms are erected; and

- d) the performance test contemplated in paragraph (b) of the whole installation of the suspended platform to be subjected to a load equal to that prescribed by the manufacturer or, in the absence of such load, to a load of 110 per cent of the rated mass load, at intervals not exceeding 12 months and in such a manner that every part of the installation is stressed accordingly.

10.13.9 The contractor must cause every hoisting rope, hook or other load-attaching device which forms part of the suspended platform to be thoroughly examined in accordance with the manufacturer's specification by the competent person before they are used every time they are assembled, and, in cases of continuous use, at intervals not exceeding three months.

10.13.10 The contractor must ensure that the Suspended Platform Supervisor or the Suspended Platform Inspector carries out a daily inspection of all the equipment prior to use, including establishing whether—

- a) all connection bolts are secure;
- b) all safety devices are functioning;
- c) all safety devices are not tampered with or vandalized;
- d) the total maximum mass load of the platform is not exceeded;
- e) the occupants in the suspended platform are using body harnesses which have been properly attached;
- f) there are no visible signs of damage to the equipment; and
- g) all reported operating problems have been attended to.

10.13.11 The contractor must ensure that all inspection and performance test records are kept on the construction site at all times and made available to an inspector, the client, the client's agent or any employee upon request.

10.13.12 The contractor must ensure that all employees required to work or to be supported on a suspended platform are—

- a) medically fit to work safely in a fall risk position or such similar environment by being in possession of a medical certificate of fitness;
- b) competent in conducting work related to suspended platforms safely;
- c) trained or received training, which includes at least—
 - (i). how to access and egress the suspended platform safely;
 - (ii). how to correctly operate the controls and safety devices of the equipment;
 - (iii). information on the dangers related to the misuse of safety devices; and
 - (iv). information on the procedures to be followed in the case of—
 - (v). an emergency;

- (vi). the malfunctioning of equipment; and
- (vii). the discovery of a suspected defect in the equipment; and
- (viii). instructions on the proper use of body harnesses.

10.13.13 The contractor must ensure that where the outriggers of a suspended platform are to be moved, only persons trained and under the supervision of the competent person effect such move, within the limitation stipulated in the operational compliance plan and that the supervisor must carry out an inspection and record the result thereof prior to re-use of the suspended platform.

10.13.14 The contractor must ensure that the suspended platform is properly isolated after use at the end of each working day in such a manner that no part of the suspended platform presents a danger to any person thereafter.

10.14 ROPE ACCESS WORK

10.14.1 The contractor must—

- a) appoint a competent person in writing as a rope access supervisor with the duty of supervising all rope access work on the site, including the duty of ensuring occupational health and safety compliance in relation to rope access work: Provided that the appointment of any such person does not relieve the construction manager of any personal accountability for failing in his management duties in terms of this regulation;
- b) ensure that all rope access work on the construction site is carried out under the supervision of a competent person; and
- c) ensure that all rope access operators are competent and licensed to carry out their work.

10.14.2 No contractor may use or allow the use of rope access work unless—

- (a) the design, selection and use of the equipment and anchors comply with the relevant safety standards
- (b) he or she is in possession of a site specific fall protection plan developed by a competent person applicable to the specific work and environment prior to the commencement of the work, including records of maintenance and inspections of all the equipment used for the work operations.

10.14.3 The contractor must ensure that adequate measures are in place to allow rescue procedures to commence immediately in the event of a fall incident taking place.

10.15 MATERIAL HOISTS

10.15.1 The contractor must ensure that every material hoist and its tower have been constructed in accordance with the generally accepted technical standards and are strong enough and free from defects.

10.15.2 The contractor must ensure that the tower of every material hoist is—

- (a) erected on firm foundations and secured to the structure or braced by steel wire guy ropes, and extends to a distance above the highest landing to allow a clear and unobstructed space of at least 900 millimetres for over travel;
- (b) enclosed on all sides at the bottom, and at all floors where persons are at risk of being struck by moving parts of the hoist, except on the side or sides giving access to the material hoist, with walls or other effective means to a height of at least 2100 millimetres from the ground or floor level; and
- (c) provided with a door or gate at least 2100 millimetres in height at each landing, and that door or gate must be kept closed except when the platform is at rest at such a landing.

10.15.3 The contractor must cause—

- (a) the platform of every material hoist to be designed in a manner that it safely contains the loads being conveyed and that the combined mass of the platform and the load does not exceed the designed lifting capacity of the hoist;
- (b) the hoisting rope of every material hoist which has a remote winch to be effectively protected from damage by any external cause to the portion of the hoisting rope between the winch and the tower of the hoist; and
- (c) every material hoist to be provided with an efficient brake capable of holding the platform with its maximum load in any position when power is not being supplied to the hoisting machinery.

10.15.4 No contractor may require or permit trucks, barrows or material to be conveyed on the platform of a material hoist and no person may so convey trucks, barrows or material unless those articles are secured or contained in a manner that displacement thereof cannot take place during movement.

10.15.5 The contractor must cause a notice, indicating the maximum mass load which may be carried at any one time and the prohibition of persons from riding on the platform of the material hoist, to be affixed around the base of the tower and at each landing.

10.15.6 The contractor of a material hoist may not require or permit any person to operate a hoist, unless the person is competent in the operation of that hoist.

10.15.7 No contractor may require or permit any person to ride on a material hoist.

10.15.8 The contractor must ensure that every material hoist—

- (a) is inspected on daily basis by a competent person appointed in writing by the contractor and such competent person must have the experience pertaining to the erection and maintenance of material hoists or similar machinery;
- (b) inspection contemplated in paragraph (a), includes the determination of the serviceability of the entire material hoist, including guides, ropes and their connections, drums, sheaves or pulleys and all safety devices;
- (c) inspection results are entered and signed in a record book by a competent person, which book must be kept on the premises for that purpose;
- (d) is properly maintained and the maintenance records in this regard are kept on site.

10.16 BULK MIXING PLANT

- 10.16.1 The contractor must ensure that the operation of a bulk mixing plant is supervised by a competent person who has been appointed in writing and is—
- (a) aware of all the dangers involved in the operation thereof; and
 - (b) conversant with the precautionary measures to be taken in the interest of health and safety.
- 10.16.2 No person supervising or operating a bulk mixing plant may authorize any other person to operate the plant, unless that person is competent to operate a bulk mixing plant.
- 10.16.3 The contractor must ensure that the placement and erection of a bulk mixing plant complies with the requirements set out by the manufacturer and that such plant is erected as designed.
- 10.16.4 The contractor must ensure that all devices to start and stop a bulk mixing plant are provided and that those devices are—
- (a) placed in an easily accessible position; and
 - (b) constructed in a manner to prevent accidental starting.
- 10.16.5 The contractor must ensure that the machinery and plant selected is suitable for the mixing task and that all dangerous moving parts of a mixer are placed beyond the reach of persons by means of doors, covers or other similar means.
- 10.16.6 No person may remove or modify any guard or safety equipment relating to a bulk mixing plant, unless authorized to do so by the appointed person contemplated in subregulation (1).
- 10.16.7 The contractor must ensure that all precautionary measures stipulated for confined spaces as determined in the General Safety Regulations, 2003, are complied with when entering any silo.
- 10.16.8 The contractor must ensure that a record is kept of all repairs or maintenance to a bulk mixing plant and that the record is available on site to an inspector, the client, the client's agent or any employee.

10.17 EXPLOSIVE ACTUATED FASTENING DEVICE

- 10.17.1 No contractor may use or permit any person to use an explosive actuated fastening device, unless—
- (a) the user is provided with and uses suitable protective equipment;
 - (b) the user is trained in the operation, maintenance and use of such a device;
 - (c) the explosive actuated fastening device is provided with a protective guard around the muzzle end, which effectively confines any flying fragments or particles; and
 - (d) the firing mechanism is so designed that the explosive actuated fastening device, will not function unless—
 - (i) it is held against the surface with a force of at least twice its weight; and

- (ii) the angle of inclination of the barrel to the work surface is not more than 15 degrees from a right angle.

10.17.2 The contractor must ensure that—

- (a) only cartridges suited for the relevant explosive actuated fastening device, and the work to be performed, are used;
- (b) an explosive actuated fastening device is cleaned and examined daily before use and as often as may be necessary for its safe operation by a competent person who has been appointed for that purpose;
- (c) the safety devices of an explosive actuated fastening device are in good working order prior to use;
- (d) when not in use, an explosive actuated fastening device and its cartridges are locked up in a safe place, which is inaccessible to unauthorized persons;
- (e) an explosive actuated fastening device is not stored in a loaded condition;
- (f) a warning notice is displayed in a conspicuous manner in the immediate vicinity wherever an explosive actuated fastening device is used; and
- (g) the issuing and collection of cartridges and nails or studs of an explosive actuated fastening device are—
 - (i) controlled and done in writing by a person having been appointed in writing for that purpose; and
 - (ii) recorded in a register by a competent person and that the recipient has accordingly signed for the receipt thereof as well as the returning of any spent and unspent cartridges.

10.18 CRANES

10.18.1 The contractor must, in addition to compliance with the applicable standards and legislation ensure that where tower cranes are used—

- (a) they are designed and erected under the supervision of a competent person;
- (b) a relevant risk assessment and method statement are developed and applied;
- (c) the effects of wind forces on the crane are taken into consideration and that a wind speed device is fitted that provides the operator with an audible warning when the wind speed exceeds the design engineer's specification;
- (d) the bases for the tower cranes and tracks for rail-mounted tower cranes are firm, level and secured;
- (e) the tower crane operators are competent to carry out the work safely; and
- (f) the tower crane operators have a medical certificate of fitness to work in such an environment, issued by an occupational health practitioner in the form of Annexure 3.

10.19 CONSTRUCTION VEHICLES AND MOBILE PLANT

10.19.1 The contractor must ensure that all construction vehicles and mobile plant—

- (a) are of an acceptable design and construction;
- (b) are maintained in a good working order;
- (c) are used in accordance with their design and the intention for which they were designed, having due regard to safety and health;
- (d) are operated by a person who—
 - (i) has received appropriate training, is certified competent and in possession of proof of competency and is authorised in writing to operate those construction vehicles and mobile plant;
 - (ii) has a medical certificate of fitness to operate those construction vehicles and mobile plant, issued by an occupational health practitioner;
- (e) have safe and suitable means of access and egress;
- (f) are properly organized and controlled in any work situation by providing adequate signalling or other control arrangements to guard against the dangers relating to the movement of vehicles and plant, in order to ensure their continued safe operation;
- (g) are prevented from falling into excavations, water or any other area lower than the working surface by installing adequate edge protection, which may include guardrails and crash barriers;
- (h) are fitted with structures designed to protect the operator from falling material or from being crushed should the vehicle or mobile plant overturn;
- (i) are equipped with an acoustic warning device which can be activated by the operator;
- (j) are equipped with an automatic acoustic reversing alarm; and
- (k) are inspected by the authorised operator or driver on a daily basis using a relevant checklist prior to use and that the findings of such inspection are recorded in a register kept in the construction vehicle or mobile plant.

10.19.2 The contractor must ensure that—

- (a) no person rides or is required or permitted to ride on a construction vehicle or mobile plant otherwise than in a safe place provided thereon for that purpose;
- (b) every construction site is organized in such a way that, as far as is reasonably practicable, pedestrians and vehicles can move safely and without risks to health;
- (c) the traffic routes are suitable for the persons, construction vehicles or mobile plant using them, are sufficient in number, in suitable positions and of sufficient size;
- (d) every traffic route is, where necessary, indicated by suitable signs;

- (e) all construction vehicles and mobile plant left unattended at night, adjacent to a public road in normal use or adjacent to construction areas where work is in progress, have appropriate lights or reflectors, or barricades equipped with appropriate lights or reflectors, in order to identify the location of the vehicles or plant;
- (f) all construction vehicles or mobile plant when not in use, have buckets, booms or similar appendages, fully lowered or blocked, controls in a neutral position, motors stopped, wheels chocked, brakes set and ignition secured;
- (g) whenever visibility conditions warrant additional lighting, all mobile plant are equipped with at least two headlights and two taillights when in operation;
- (h) tools, material and equipment are secured and separated by means of a physical barrier in order to prevent movement when transported in the same compartment with employees;
- (i) vehicles used to transport employees have seats firmly secured and adequate for the number of employees to be carried; and
- (j) all construction vehicles or mobile plant travelling, working or operating on public roads comply with the requirements of the National Road Traffic Act, 1996.

10.20 ELECTRICAL INSTALLATIONS AND MACHINERY ON CONSTRUCTION SITES

10.20.1 The contractor must, in addition to compliance with the applicable legislation ensure that—

- (a) before construction commences and during the progress thereof, adequate steps are taken to ascertain the presence of and guard against danger to workers from any electrical cable or apparatus which is under, over or on the site;
- (b) all parts of electrical installations and machinery are of adequate strength to withstand the working conditions on construction sites;
- (c) the control of all temporary electrical installations on the construction site is designated to a competent person who has been appointed in writing for that purpose;
- (d) all temporary electrical installations used by the contractor are inspected at least once a week by a competent person and the inspection findings are recorded in a register kept on the construction site; and
- (e) all electrical machinery is inspected by the authorized operator or user on a daily basis using a relevant checklist prior to use and the inspection findings are recorded in a register kept on the construction site.

10.21 USE AND TEMPORARY STORAGE OF FLAMMABLE LIQUIDS ON CONSTRUCTION SITES

10.21.1 The contractor must, in addition to compliance with the provisions for the use and storage of flammable liquids in the applicable legislation, ensure that—

- (a) where flammable liquids are being used, applied or stored at the workplace concerned, it is done in a manner that does not cause a fire or explosion hazard, and that the workplace is effectively ventilated;
- (b) no person smokes in any place in which flammable liquid is used or stored, and the contractor must affix a suitable and conspicuous notice at all entrances to any such areas prohibiting such smoking;
- (c) an adequate amount of efficient fire-fighting equipment is installed in suitable locations around the flammable liquids store with the recognized symbolic signs;
- (d) only the quantity of flammable liquid needed for work on one day is taken out of the store for use;
- (e) all containers holding flammable liquids are kept tightly closed when not in actual use and, after their contents have been used up, are removed from the construction site and safely disposed of;
- (f) where flammable liquids are decanted, the metal containers are bonded and earthed; and
- (g) no flammable material, including cotton waste, paper, cleaning rags or similar material is stored together with flammable liquids.

10.22 WATER ENVIRONMENTS

10.22.1 The contractor must ensure that where construction work is done over or in close proximity to water, provision is made for—

- (a) preventing persons from falling into water; and
- (b) the rescuing of persons in danger of drowning.

10.22.2 The contractor must ensure that where a person is exposed to the risk of drowning by falling into the water, the person is provided with and wears a lifejacket.

10.23 STACKING AND STORAGE ON CONSTRUCTION SITES

10.23.1 The contractor must, in addition to compliance with the provisions for the stacking of articles ensure that—

- (a) a competent person is appointed in writing with the duty of supervising all stacking and storage on a construction site;
- (b) adequate storage areas are provided;
- (c) there are demarcated storage areas; and
- (d) storage areas are kept neat and under control.

- 10.23.2 Lay down areas will be kept neat and tidy. Areas will be barricaded and all equipment, material or tools will be stored neatly inside this area. Stacking of equipment or material will be done on level solid surfaces. Overhanging of material will not be allowed.
- 10.23.3 Flammable liquids will be stored in a well ventilated store room with a Fire extinguisher placed on the outside of the store.
- 10.23.4 Gas Cylinders will be secured in a trolley while work is being done on site and will remain upright at all times. Gas cylinders will be stored upright inside a well ventilated area, empty and full cylinders will be stored apart from another.
- 10.23.5 The Torch, pipes and regulators will be stored detached from the cylinders and will be kept in a storage box.

10.24 FIRE PRECAUTIONS ON CONSTRUCTION SITES

10.24.1 The contractor must ensure that—

- (a) all appropriate measures are taken to avoid the risk of fire;
- (b) sufficient and suitable storage is provided for flammable liquids, solids and gases;
- (c) smoking is prohibited and notices in this regard are prominently displayed in all places containing readily combustible or flammable materials;
- (d) in confined spaces and other places in which flammable gases, vapours or dust can cause danger—
 - (i) only suitably protected electrical installations and equipment, including portable lights, are used;
 - (ii) there are no flames or similar means of ignition;
 - (iii) there are conspicuous notices prohibiting smoking;
 - (iv) oily rags, waste and other substances liable to ignite are without delay removed to a safe place; and
 - (v) adequate ventilation is provided;
- (e) combustible materials do not accumulate on the construction site;
- (f) welding, flame cutting and other hot work are done only after appropriate precautions have been taken to reduce the risk of fire;
- (g) suitable and sufficient fire-extinguishing equipment is placed at strategic locations or as may be recommended by the Fire Chief or local authority concerned, and that such equipment is maintained in a good working order;
- (h) the fire equipment contemplated in paragraph (g) is inspected by a competent person, who has been appointed in writing for that purpose, in the manner indicated by the manufacturer thereof;
- (i) a sufficient number of workers are trained in the use of fire- extinguishing equipment;

- (j) where appropriate, suitable visual signs are provided to clearly indicate the escape routes in the case of a fire;
- (k) the means of escape is kept clear at all times;
- (l) there is an effective evacuation plan providing for all—
 - (i) persons to be evacuated speedily without panic;
 - (ii) persons to be accounted for; and
 - (iii) plant and processes to be shut down; and
- (m) a siren is installed and sounded in the event of a fire.

10.25. CONSTRUCTION EMPLOYEES' FACILITIES

10.25.1 The contractor must, in addition to the construction site provisions in the applicable legislation provide at or within reasonable access of every construction site, the following clean, hygienic and maintained facilities:

- (a) Shower facilities after consultation with the employees or employees representatives, or at least one shower facility for every 15 persons;
- (b) at least one sanitary facility for each sex and for every 30 workers;
- (c) changing facilities for each sex; and
- (d) sheltered eating areas.

10.25.2 The contractor must provide reasonable and suitable living accommodation for the workers at construction sites who are far removed from their homes and where adequate transportation between the site and their homes, or other suitable living accommodation, is not available

10.26. OPERATORS OF MACHINERY

10.26.1 Operators of machinery will be required to complete a daily pre-start checklist before work commences. Operators must be in possession of a **valid Medical Certificate issued by an Occupational Health Practitioner** and the operator will be in possession of a **Competency Certificate for the Machine he/she operates. Drivers of trucks or any other Vehicle or Plant travelling on Public Roads must also be in possession of a valid PDP licence.** It will remain the responsibility of the Operator of a Vehicle/ Plant / Machine to report all oil leaks to the supervisor and to have the Vehicle / Plant / Machine fixed as soon as possible. Where there are **Life Threatening Faults the Vehicle / Plant / Machine will not be used until it has been sufficiently repaired.**

10.27 CRANES AND LIFTING EQUIPMENT

10.27.1 Cranes and Lifting equipment will comply with OHS Act 85 of 1993, Driven Machinery Regulations (DMR) 18. Operators of mobile cranes must be in possession of valid PDP license, medical

certificate and training certificate. Mobile cranes must have a valid load test certificate and must be inspected monthly by a competent person on a register. All lifting equipment/tackle must have a valid load test certificate and will be inspected monthly by a competent person on a register. At no stage will gas cylinders be lifted by a crane unless the cylinders are in a cradle designed to carry equipment. Cranes will be directed by a Banks man / Supervisor with sufficient communication with the crane. It will remain the responsibility of the operator to ensure that the loads are not slewed over other employees and that the mobile crane slew area is barricaded with tape while the crane is in operation. **Where there are Life Threatening Faults the Crane Operations will not start until the faults have been sufficiently repaired and the Crane was issued with a certificate to prove the crane has been fixed and where applicable, a new load test was conducted.**

10.28 FLAME CUTTING AND WELDING

- 10.28.1 Gas Cylinders will be in a trolley while work is being done on site and will remain upright at all times. Gas cylinders will be stored upright inside a well ventilated area, empty and full cylinders will be stored apart from another. The Torch, pipes and regulators will be stored detached from the cylinders and will be kept in a storage box.
- 10.28.2 Electric welders will have insulated electrical cables, electrodes and an effective earth system. Areas where welding is taking place must be barricaded with welding screens and sufficient warning signs have to be erected to protect other employees from the glare and sparks. **Operator will be trained and experienced in welding.**
- 10.28.3 A fully functional and inspected **Fire extinguisher** will be available at the area of work **where any spark producing activity takes place.**

10.29. FORM- & SUPPORT WORK

- 10.29.1 Work will be done under supervision of a competent supervisor who has been appointed in writing. Before work commences drawings will be issued to the Principal Contractor. Decks will be erected in a systematic way and will at no time endanger any persons working on the deck. Handrails will be placed around the edges of the temporary or permanent decks. Safe access will be provided and fall protection will be used as per **the Contractor's Risk assessment / Fall protection plan.** No material or rubble will be thrown from any height. Access control will be done by the contractor responsible for the formwork and support work and while decking is in progress no access to or by other contractors shall be allowed.

10.30. STEEL ASSEMBLING & PLACING

- 10.30.1 Area where assembly takes place must be demarcated. When working at heights employees must be issued with safety harnesses and other PPE required as per the risk assessment. The correct tools must be used for the work to be done.
- 10.30.2 When handling steel, beware of the cutting edges of the steel and be aware of other people. Steel must be well balanced before lifting with a crane.

10.31. GENERAL OHS REQUIREMENTS

10.31.1 The **Contractor** and its contractors shall ensure that;

- a) All employees are issued with the appropriate **PPE** and that they are trained in the correct use thereof.
- b) Employees are medically certified to work on heights and to operate Plant and Machinery.
- c) All security measures implemented on the **Project** are adhered to and that random searching maybe carried out.
- d) All signs and notices implemented on the **Project** are adhered to and not damaged in any way.
- e) Suitable fire fighting equipment is made available and employees are trained in the safe use thereof.
- f) No large volumes of flammable substances are stored and suitable precautions are taken to store those that are.
- g) Suitable measures are in place with regards to sanitation, changing facilities, eating facilities, and drinking water.
- h) Measures are taken to reduce any environmental impairment with regards to noise, ground, and air and water pollution.
- i) Suitable lighting is provided in all darkened working areas.
- j) No employees are permitted to enter / work on the **Project** while under the influence of any intoxicating substance.
- k) No machinery, article, substance, plant, or PPE belonging to the **Principal Contractor** is used without permission.
- l) No illegal immigrants are employed by the **Contractor or Contractor** while on the **Project**.
- m) No employee shall be exposed to unprotected heights.
- n) Only double lanyard, with a shock absorber safety harnesses with a foot strap shall be used on projects.
- o) All employees shall be properly trained in the use of all issued PPE.
- p) Records shall be maintained regarding issue of PPE to employees.

10.31.2 Without derogating from the generality of the above requirements and notwithstanding the applicable legislation the **Contractor** and its contractors shall ensure the following;

- a) The provision of a safe and healthy working environment,
- b) The provision of safe and healthy systems of work, plant and machinery,
- c) The identification of the prevalent hazards to health and safety and the precautionary measures to be taken,

- d) The provision of the necessary information, instructions and training,
- e) The enforcement of the established precautionary measures,
- f) Informing employees on their scope of authority,
- g) Making employees conversant with the identified hazards and precautionary measures,
- h) Ensuring that no employee is victimized as a result of adhering to these requirements.

10.32. NON CONFORMANCES

- 10.32.1 Any contractor employee who is found not adhering to the PUBLIC WORKS, ROADS & INFRASTRUCTURE OHS procedures, Contractor OHS Plan, applicable legislations or who is observed doing unsafe acts or contributing to creating unsafe conditions will be issued with a Non Conformance Report and the relevant Contracting Firm will then be stopped and fined according to the scale as stipulated below.
- 10.32.2 Contractor employees will also be reprimanded as per the Company HR Procedures; a first transgression constitutes a **verbal warning**, a second transgression a **written warning** and a third transgression a **full disciplinary hearing** as per the Company HR Procedures. Any Life threatening unsafe act or condition must be treated as a Gross Neglect of Company Safety Rules and Procedures and a Disciplinary Hearing shall be conducted to determine the root cause of the incident and the appropriate action which must be taken to rectify the unsafe situation or prevent future incidents from occurring.
- 10.32.3 Copies of the Non Conformance Report and disciplinary procedures must be kept on record.

Minor Transgression

Not wearing PPE, e.g. Hardhats, earplugs when required, etc.

A Fine up to R 500-00 will be issued to the Contractor.

Medium Transgression

Not contributing to good housekeeping standards, proper stacking and storage standards, no Supervision for activities, not doing Risk Assessments, Toolbox Talks not conducted, No safe working procedures in place, not issuing PPE to their Employees, etc.

A Fine up to R 2500-00 will be issued to the Contractor.

Major Transgression

Any Life threatening activity, act or contribution by an employee in creating an unsafe environment for his own employees or other Persons, Not wearing or using critical PPE e.g. Eye protection, Safety Harness or Respiratory equipments as stipulated / required in the task risk assessment.

A fine up to R 5000-00 must be issued to the Contracting Firm.

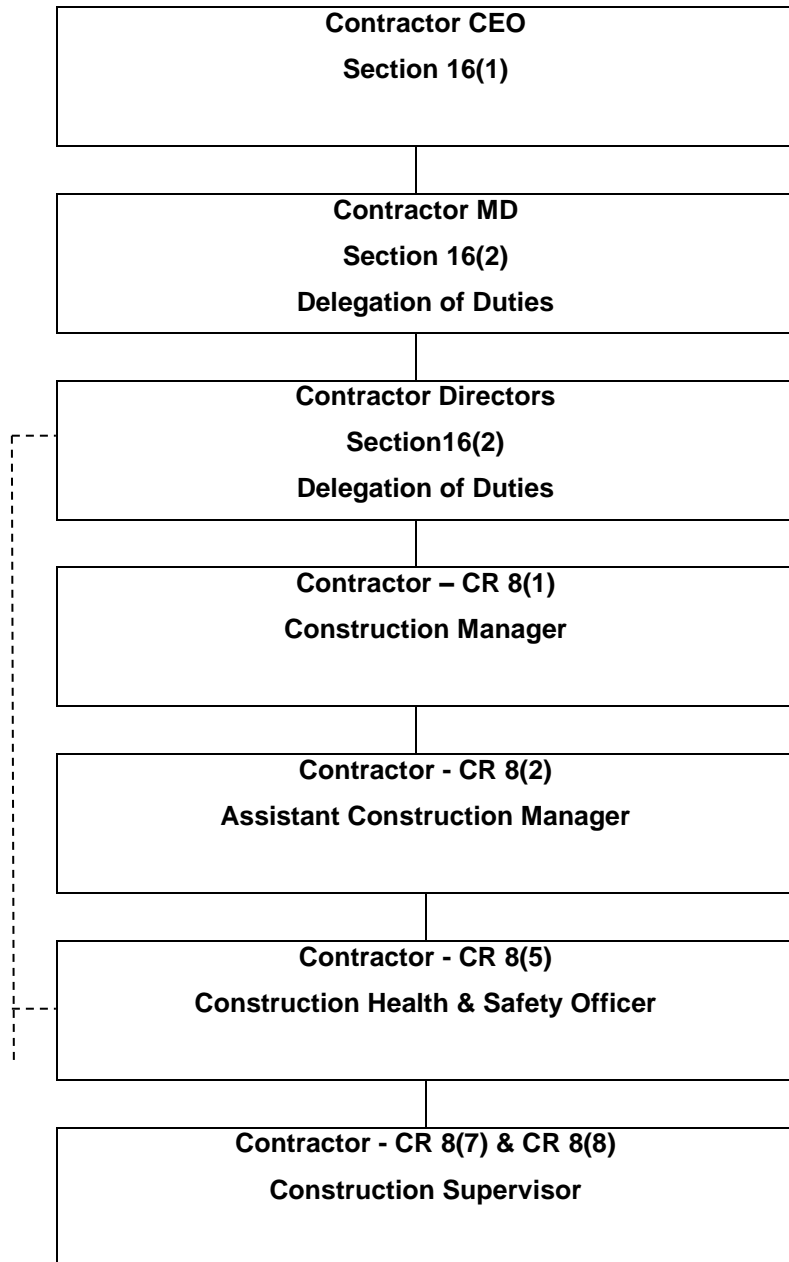
Any Contractor who receives more than 3 Major transgressions for the same unsafe act or condition must be called in for a disciplinary hearing and if another incident of the same nature occurs then the contractor may be put off site and black listed with the Tendering Department of PUBLIC WORKS, ROADS & INFRASTRUCTURE.

Copies of all Non Conformance Reports must be kept in the project OHS File for references.

Fines instituted against any Contractor shall be refundable when the Contractor has demonstrated compliance to the applicable Legislation / or Principle Contractors Safety Requirements and the Principle Contractor has been satisfied that the Contractor has indeed addressed the issue which led to the fine imposed.

The **Principal Contractor** reserves the right to request immediate corrective action from any contractor of any non-compliance identified in terms of this agreement by the **Contractor** and its contractors during the performance of the work on the Project. The **Principal Contractor** further reserves the right to stop any work that does not comply with the **OHS** standards and without any cost to the **Principal Contractor**. This agreement places the onus on the **Contractor** to contact the **Principal Contractor** in the event of the inability to perform as per this agreement.

2. Simple OHS Organogram




ANNEXURE 1 - GENERAL OHS INDUCTION

1. Each employee remains responsible for his own Health and Safety and for those around him.
2. A copy of all applicable legislation along with the company's procedures is available to all employees at the Project OHS officer or Site Agent.
3. Cell Phones are only allowed to be used by Supervisory Staff in a safe area, other Cell Phones and I-pods are prohibited from PUBLIC WORKS, ROADS & INFRASTRUCTURE projects.
4. Always follow instructions from your Supervisor – DO NOT TAKE CHANCES.
5. Always report unsafe acts or conditions to your Supervisor.
6. Always use the Protective equipment and clothing issued to you.
7. Report all injuries or incidents to your Supervisor before the end of shift, no matter how minor they may be.
8. Do not fool around while working – Practical jokes can be dangerous.
9. Do not use alcohol or drugs at work and do not report for work intoxicated.
10. Knives and Fire arms are not allowed in any work area.
11. No Physical assault or fighting is allowed in any work area.
12. Do not use Plant or Machinery if you are not authorised or trained to do so.
13. Do not walk underneath any suspended loads and stay out of the way of Plant and Machinery items.
14. Always look around you when you walk on site and make sure you do not fall over equipment, material or into holes.
15. Do not enter a barricaded area, unless you are working in the area.
16. Do not climb onto high structures, including scaffolds unless you are working on the structure and you are wearing your safety harness.
17. Your safety harness must always be secured to a solid structure when working at unsafe heights.
18. Report all defects on tools, equipment and machinery to your supervisor.
19. Never take shortcuts – always use the access provided and hold onto the handrails provided at the stairs.
20. Obey all safety signs and notices.
21. Return all safety equipment back to the person who issued it to you.
22. Please keep your area clean and tidy – a tidy project is a safe project.
23. Never misuse, abuse or alter safety devices on plant, machinery or equipment and do not ride on Plant, machinery with no seats for passengers.
24. Never sit on an open vehicle when there are loose material / tools / equipment in the back.

25. Never lift heavy objects alone – rather ask someone for help or utilise a crane.
26. Keep electrical tools and equipment away from water.
27. Do not throw materials / tools / equipment from any height.
28. All drop off edges and openings must be barricaded – do not tamper with the barricading.
29. Only authorised persons will be allowed in the work areas.
30. Do not pollute or damage the environment – use the facilities provided for you.
31. Stay alert, follow the rules and protect yourself and other workers from accidents.
32. Be aware of any visitors on the site and if you see any person on site who does not belong on site, remove him from site or report to your supervisor.
33. If you are unsure about safety then ask your supervisor or Safety Representative.

ANNEXURE 2

 <p>LIMPOPO PROVINCIAL GOVERNMENT REPUBLIC OF SOUTH AFRICA</p> <hr/> <p>DEPARTMENT OF PUBLIC WORKS, ROADS AND INFRASTRUCTURE</p>	<p align="center">OCCUPATIONAL H & S MANAGEMENT SYSTEM CONTRACTOR CONSTRUCTION REGULATIONS 7(1)(c)(v) APPOINTMENT LETTER</p>	OH.S	Section 4.4.4.1.13	
		REV	6.3	13/05/14
		PAGE	95 of 3	
Record Keeping	Project OHS File, Employee File, Archive			

**OCCUPATIONAL HEALTH & SAFETY ACT No. 85 of 1993
CONSTRUCTION REGULATIONS 2014, 7(1)(c)(v)**

(PC Resp. Person)

(PC Company Name)

I, _____ representing _____ in my capacity as the
Contracts Manager

(Contractor Resp. Person)

Assigned person hereby assign _____ **(Name of Person)**

Representing __

(Contractor Company Name)

_____ **(Name of Contractor Company)** in the capacity of

_____ **(Designation)** and vested with the duty of ensuring the employer
complies with the

provisions of “the Act” subject to my control and directions in respect of all projects and areas under his
control, to perform part of the

(Contractor Company Name)

construction work, or work in the following area/s of the _____

(Name of Project), situated in _____(Name of Suburb/ Town) as per
the attached

annexure until further notice.

Having read both this page and the annexure attached to this page, I accept that my company and I,
representing my company are both fully responsible for any acts or omissions in terms of the Act by any of
our employees and any mandatory.

Principal Contractor Assigned Responsible Person
Initials and Surname
Designation

Date

ACCEPTANCE OF APPOINTMENT

(Contractor Resp. Person)

(Contractor Company Name)

I, _____ (Designated Responsible Person) of _____
(Name of Company)

hereby accept this assignment and confirm that I am conversant with the requirements as stipulated on this annexure and agree to carry out the duties as set out to the principal contractor in the Occupational Health & Safety Act No. 85 of 1993, particularly emphasized by the Construction Regulations 2014, which, is cascading down to us. I further ensure you that I will adhere to all other applicable Municipality Regulations and By-laws.

**Contractor
Initials and Surname
Designation**

Date

ANNEXURE

CONSTRUCTION REGULATIONS 2014, 7(1)(c)(v)

DUTIES OF PRINCIPAL CONTRACTOR AND CONTRACTOR

- 1) A principal contractor must—
 - a) provide and demonstrate to the client a suitable, sufficiently documented and coherent site specific health and safety plan, based on the client's documented health and safety specifications contemplated in regulation 5(1)(b), which plan must be applied from the date of commencement of and for the duration of the construction work and which must be reviewed and updated by the principal contractor as work progresses;
 - b) open and keep on site a health and safety file, which must include all documentation required in terms of the Act and these Regulations, which must be made available on request to an inspector, the client, the client's agent or a contractor; and
 - c) on appointing any other contractor, in order to ensure compliance with the provisions of the Act—
 - (i) provide contractors who are tendering to perform construction work for the principal contractor, with the relevant sections of the health and safety specifications contemplated in regulation 5(1)(b) pertaining to the construction work which has to be performed;
 - (ii) ensure that potential contractors submitting tenders have made sufficient provision for health and safety measures during the construction process;
 - (iii) ensure that no contractor is appointed to perform construction work unless the principal contractor is reasonably satisfied that the contractor that he or she intends to appoint, has the necessary competencies and resources to perform the construction work safely;
 - (iv) ensure prior to work commencing on the site that every contractor is registered and in good standing with the compensation fund or with a licensed compensation insurer as contemplated

in the Compensation for Occupational Injuries and Diseases Act, 1993;

- (v) appoint each contractor in writing for the part of the project on the construction site;
 - (vi) take reasonable steps to ensure that each contractor's health and safety plan contemplated in subregulation (2)(a) is implemented and maintained on the construction site;
 - (vii) ensure that the periodic site audits and document verification are conducted at intervals mutually agreed upon between the principal contractor and any contractor, but at least once every 30 days;
 - (viii) stop any contractor from executing construction work which is not in accordance with the client's health and safety specifications and the principal contractor's health and safety plan for the site or which poses a threat to the health and safety of persons;
 - (ix) where changes are brought about to the design and construction, make available sufficient health and safety information and appropriate resources to the contractor to execute the work safely; and
 - (x) discuss and negotiate with the contractor the contents of the health and safety plan contemplated in subregulation (2)(a), and must thereafter finally approve that plan for implementation;
- d) ensure that a copy of his or her health and safety plan contemplated in paragraph (a), as well as the contractor's health and safety plan contemplated in subregulation (2)(a), is available on request to an employee, an inspector, a contractor, the client or the client's agent;
 - e) hand over a consolidated health and safety file to the client upon completion of the construction work and must, in addition to the documentation referred to in subregulation (2)(b), include a record of all drawings, designs, materials used and other similar information concerning the completed structure;
 - f) in addition to the documentation required in the health and safety file in terms of paragraph (c)(v) and subregulation (2)(b), include and make available a comprehensive and updated list of all the contractors on site accountable to the principal contractor, the agreements between the parties and the type of work being done; and
 - g) ensure that all his or her employees have a valid medical certificate of fitness specific to the construction work to be performed and issued by an occupational health practitioner in the form of Annexure 3 of the Construction Regulation.

(2) A contractor must prior to performing any construction work—


- a) provide and demonstrate to the principal contractor a suitable and sufficiently documented health and safety plan, based on the relevant sections of the client's health and safety specification contemplated in regulation 5(1)(b) and provided by the principal contractor in terms of subregulation (1)(a), which plan must be applied from the date of commencement of and for the duration of the construction work and which must be reviewed and updated by the contractor as work progresses;
- b) open and keep on site a health and safety file, which must include all documentation required in terms of the Act and these Regulations, and which must be made available on request to an inspector, the client, the client's agent or the principal contractor;
- c) before appointing another contractor to perform construction work be reasonably satisfied that the contractor that he or she intends to appoint has the necessary competencies and resources to perform the construction work safely;
- d) co-operate with the principal contractor as far as is necessary to enable each of them to comply with the provisions of the Act; and

- e) as far as is reasonably practicable, promptly provide the principal contractor with any information which might affect the health and safety of any person at work carrying out construction work on the site, any person who might be affected by the work of such a person at work, or which might justify a review of the health and safety plan.
- (3) Where a contractor appoints another contractor to perform construction work, the duties determined in subregulation (1)(b) to (g) that apply to the principal contractor apply to the contractor as if he or she were the principal contractor.
- (4) A contractor must take reasonable steps to ensure co-operation between all contractors appointed by the principal contractor to enable each of those contractors to comply with these Regulations.
- (5) No contractor may allow or permit any employee or person to enter any site, unless that employee or person has undergone health and safety induction training pertaining to the hazards prevalent on the site at the time of entry.
- (6) A contractor must ensure that all visitors to a construction site undergo health and safety induction training pertaining to the hazards prevalent on the site and must ensure that such visitors have the necessary personal protective equipment.
- (7) A contractor must at all times keep on his or her construction site records of the health and safety induction training contemplated in subregulation (6) and such records must be made available on request to an inspector, the client, the client's agent or the principal contractor;.
- (8) A contractor must ensure that all his or her employees have a valid medical certificate of fitness specific to the construction work to be performed and issued by an occupational health practitioner in the form of Annexure 3 of the Construction Regulations.

**Contractor
Initials and Surname
Designation**

Date

ANNEXURE 3

 DEPARTMENT OF PUBLIC WORKS, ROADS AND INFRASTRUCTURE	OCCUPATIONAL H & S MANAGEMENT SYSTEM ASSISTANT CONSTRUCTION SUPERVISOR OHS Act 85 of 1993 CR 8(8) APPOINTMENT LETTER	O.H.S	Section 4.4.4.1.18	
		REV	6.3	13/05/14
		PAGE	1 of 1	
Record Keeping	Project OHS File, Employee File, Archive			

I, ENTER NAME OF PERSON MAKING APPOINTMENT	ID NO.
representing PUBLIC WORKS, ROADS & INFRASTRUCTURE on the	hereby appoint,
PLANT WORKSHOP	
GYS WAGNER	ID NO
with the duty of <u>Assistant Construction Supervisor, CR 8(8)</u> and your area of responsibility is as follows;	
DESIGNATE GEOGRAPHICAL RESPONSIBLE AREA ON SITE :ROADSPAN	
APPOINTMENT START DATE	APPOINTMENT END DATE

Your duties will include but not limited to;

- Take over the duties of the Construction Work Supervisor in his absence.
- Ensuring that all company safety, health and environmental procedures along with any specific client requirements are implemented and adhered to.
- Ensuring that all applicable legislative requirements are implemented and complied with.
- Ensuring that only authorised persons gain access to the construction premises and associated areas.
- Ensuring that all persons are made aware of the hazards associated with their work and that all reasonable measures are implemented to reduce these risks.
- Ensuring that all construction activities are carried out under the control and supervision of competent supervisors.
- Ensuring that all plant and machinery is in a safe working condition and that only trained and authorised persons utilize such items.
- Ensuring that all construction equipment is in a safe working condition and that only trained and authorised persons utilize such items.
- Ensuring that the necessary personal protective equipment is made available and used by the appropriate persons.
- Ensuring that all contractors adhere to the health and safety requirements of the contract.
- Ensuring that all injuries and incidents are reported and investigated in the appropriate manner and that suitable measures are implemented to prevent re-occurrences.
- Ensuring that all reasonable steps are taken to ensure the health and safety of all persons employed on the contract and of those who are affected by the construction operations.
- Assist the appointed Construction Work Supervisor in ensuring that all applicable safety requirements are adhered to on the project.

You are to take all reasonable steps to ensure the health and safety of all persons associated with this designation. This appointment also entrusts you to assist and advise all employees in ensuring adherence to company and statutory health and safety requirements. Please familiarise yourself with these requirements and report all deviations and areas of non-compliance, which you cannot rectify to the appointed Construction Work Supervisor or to me directly.

Competency / License	Y/N	Expiry Date	Remarks	Initial
Competency Certificate				
General Induction				
Medical Competency				

SIGNATURE

DESIGNATION

DATE

ACCEPTANCE OF DESIGNATION

I accept the assignment as set out above and confirm my understanding of the duties involved.

SIGNATURE

DESIGNATION

DATE

WORKING AT HEIGHT EVALUATION

1. ARE YOU AFRAID OF HEIGHTS?
2. HAVE YOU PREVIOUSLY WORKED ON HEIGHTS?
3. ARE YOU ON ANY MEDICATION WHICH CAN MAKE YOU DROWSY?

YES	NO
YES	NO
YES	NO

Please tick (✓) the appropriate box for the answer to the questions above.

PLAY IT SAFE!!!!

Acknowledged By

Presented by

Name _____
 Coy no _____
 Signature _____
 Date _____
 Contract _____

Name _____
 Coy No _____
 Signature _____
 Date _____

Contractor to utilise the Principal Contractors First Aid facilities (yes / no)

Total number of Contractor employees expected on the Project

Emergency Contact Person of Contractor

Emergency Contact No.

Compensation Commissioners Fund No.

MANDATORY AGREEMENT ACCEPTANCE BY THE CONTRACTOR

NAME	SIGNATURE	DESIGNATION	DATE

ACKNOWLEDGED BY THE PRINCIPAL CONTRACTOR

4

NAME	SIGNATURE	DESIGNATION	DATE

PART C2: PRICING DATA

C1.2.2 Variations to the General Conditions of Contract

The following amendments of the General Conditions of Contract 2015 apply to this contract. The headings in these Special Conditions of Contract shall not be deemed to be part thereof nor be taken into consideration in the interpretation or construction thereof or of the Contract.

4. CONTRACTOR'S GENERAL OBLIGATIONS

4.1 EXTENT OF OBLIGATIONS AND LIABILITY

Change the number of clauses 4.1.1 to 4.1.2 to read 4.1.2 and 4.1.3.
Add the following new clause 4.1.1:

“4.1.1 Contractor deemed to have inspected the Site

The Contractor shall be deemed to have inspected and examined the Site and its surroundings and information available in connection therewith and to have satisfied himself before submitting his tender (as far as practicable) as to

- (a) the form and nature of the Site and its surroundings, including subsurface conditions,
- (b) the hydrological and climatic conditions.
- (c) the extent and nature of work and materials necessary for the execution and completion of the Works,
- (d) the means of access to the Site and the Accommodation he may require

and, in general, shall be deemed to have obtained all information (as far as is practicable) as to risks, contingencies and all other circumstances which may influence or affect his tender.

No subsequent claims by the Contractor arising from his lack of knowledge of perceptible conditions on the site or its surroundings or of information available in connection therewith shall be entertained.”

4.1.2 Extent of Contractor' obligations

Add the following to this sub-clause:

The Contractor shall, save in so far as it is legally or physically impossible,

- (a) design (to the extent provided in the Contract), execute and complete the Works and remedy any defects therein in accordance with the provisions of the Contract, and
- (b) provide all superintendence, labour, materials, Construction Equipment, Temporary Works, including the design thereof, all requisite transport and all other things, whether of a temporary or permanent nature, required in and for such design, execution and completion of the Works and for the remedying of any defects, so far as the necessity for providing the same is specified in or reasonably to be inferred from the Contract.
- (c) After award of the Contract, the Contractor shall be obligated to ensure that at least the Construction Equipment stated on the prescribed form in the Tender Documents, or Construction Equipment equivalent thereto, are on the site when required.”

4.3 LEGAL PROVISIONS

Add the following sub-sub clauses:

4.3.1.1 Mine Health and Safety Act, number 29 of 1996

The Employer shall obtain the Mining Authorisation for all sites where mining activities, as defined in the Mine Health and Safety Act, number 29 of 1996 as amended, are to be conducted.

4.3.1.2 Mineral Resources Petroleum Development Act, number 28 of 2002

The Contractor shall assume responsibility for the Environmental Management Programme (EMPR) in respect of the sites and shall ensure that the sites are rehabilitated at the conclusion of the contract.”

4.4. SUBCONTRACTING

Add the following subclauses:

“4.4.7 Continuing obligation extending beyond date of completion of the work

In the event of a Selected Subcontractor having undertaken to the Contractor, in respect of work executed or goods or materials supplied by such Selected Subcontractor, any continuing obligation extending beyond the date of completion of the work or the end of the Defects Liability Period, and Latent Defect Liability Period as the case may be, the Contractor shall at any time after such date cede to the Employer, at the Employer’s request and cost, the benefit of such obligation for the unexpired duration thereof, whereupon the Employer shall have no further claim against the Contractor in respect of the said continuing obligation.

4.4.8 Convert the subcontract

If the contract shall have been cancelled in terms of clause 9.2, the Employer shall have the right, by written notice given to any Selected Subcontractor not later than 28 days after the said cancellation, to convert the subcontract concerned to a direct contract between the Employer and the Subcontractor.

Provided that:

- (a) the terms of the said direct contract shall mutatis mutandis be those of the subcontract concerned, and
- (b) the Employer shall have the said right, notwithstanding any breach of the subcontract by the Contractor, subject to his forthwith paying to the Subcontractor all amounts then owing to the Subcontractor by the Contractor and perform any obligation which the Contractor has failed to perform.”

4.9 CONSTRUCTION EQUIPMENT

Add the following: sub clauses:

“4.9.2 Preclude seizure of construction equipment

In order to preclude seizure by the owner of any constructional plant being held by the Contractor on a hire or hire-purchase agreement for the purposes of the contract, the Employer shall be entitled to pay any such owner the amount of any outstanding instalment or other sum owing under any hire or hire-purchase agreement and in the event of his doing so, any amount thus paid by him shall be a debt payable to the Employer by the Contractor and may be deducted by the Employer from any moneys owing or that may become owing to the Contractor in terms of the contract, or be recovered at law from the Contractor by the Employer.

4.9.3 Constructional plant brought to the site by the subcontractor

When entering into any subcontract agreement for the execution of any part of the works, the Contractor shall incorporate in such subcontract agreement, by reference or otherwise, the provisions of this clause in respect of construction equipment brought to the site by the subcontractor.”

5. TIME AND RELATED MATTERS

5.4 ACCESS TO THE SITE

Add the following subclause:

- 5.4.4** “If the site is insufficient for the needs and requirements of the work, the Contractor shall arrange with the owners or tenants for the additional land required and pay all rent and costs in connection therewith. The Contractor shall be responsible for all damage to such land and property, and he shall indemnify the Employer and hold him harmless in respect of all claims, demands proceedings, damages, costs, including attorneys and client costs, charges and expenses arising in respect thereof.”

5.14 COMPLETION

Delete the following:

“5.14.5.3 The retention shall be reduced to half in terms of Clause 6.10.5”

5.16 APPROVAL

5.16.1 Final Approval Certificate

Delete the last sentence of this clause and replace with:

The payment of the retention money or the release of the retention money guarantee shall only be permitted after the Employer’s Agent has issued the Final Approval Certificate.

6. PAYMENT AND RELATED MATTERS

6.6 PROVISIONAL SUMS AND PRIME COST SUMS

6.6.1.2.1 In the first line after the word "sums" insert “excluding VAT”

6.6.1.2.2 In the fourth line after the word "amount" insert “excluding VAT”

6.10.5 Payment of retention money

Delete the first four lines where reference is made to the first half of retention. The paragraph should read:”

“Retention money shall become due when the Engineer shall have certified payment thereof within 14 days after the expiration of the Defects Liability Period, extended if necessary in terms of Clauses 5.14.4 or 7.8.1. No retention, or part thereof, will hence be payable upon the issue of a Certificate of Completion as indicated in Clause 5.14.5.3.

6.11 VARIATIONS EXCEEDING 15 PER CENT

6.11.1 Second paragraph:

Change “15%” to “20%”.

Add the following subclause:

“6.11.2 Variations exceeding 20% per cent

Where the decrease or increase in the quantity of work has not resulted from a written variation order (or an additional agreement) in terms of clause 5.11 but from the fact that the quantities are less or more than those given in the bill of quantities, the tendered rates or sums shall still apply, except in the case of a sub-item (or an item not subdivided into sub-items) in the bill of quantities, which covers work the value of which during the tender stage exceeds 7,5% of the value of the tender sum, and where the quantity of such sub-item or item, upon completion of the contract, deviates by more than 20% from the quantity given in the bill of quantities so that the scale of activities or the method of construction consequently changes to such an extent that the tendered rate or sum no longer applies. In such case the Employers’ Agent, should he deem it to be in the interest of the Employer or should the Contractor enter a claim, shall, considering the extent by which the deviation in respect of the quantity of the sub-item or item concerned exceeds 20%, determine a sum which will be equitable in the circumstances, and shall certify that such sum shall be deducted from or added to the sums owing to the Contractor.”

C2.1 PRICING INSTRUCTIONS

- 1 For the purposes of this bill of quantities, the following words shall have the meanings hereby assigned to them:
 - Unit: The unit of measurement for each item of work as defined in the standard specifications or the project specifications.
 - Quantity: The number of units of work for each item.
 - Rate: The payment per unit of work for which the Bidder tenders to do the work.
 - Amount: The product of the quantity and the rate tendered for an item.
 - Lump Sum: An amount tendered for an item, the extent of which is described in the bill of quantities, the specifications or elsewhere, but of which the quantity of work is not measured in units.
- 2 This bill of quantities forms part of the contract documents and must be read in conjunction with all the other documents comprising the contract documents.
- 3 The quantities set out in the bill of quantities are only approximate quantities. The quantities of work finally accepted and certified for payment, and not the quantities given in the bill of quantities, will be used to determine payments to the contractor.

The validity of the contract shall in no way be affected by differences between the quantities in the bill of quantities and the quantities finally certified for payment. Work is valued at the rates or lump sums tendered, subject only to the provisions of sub-clause M0208 (a) of the standard specifications.
- 4 Rates and lump sums shall include full compensation for overheads, profits, incidentals, tax (other than VAT), etc, and for the completed items of work as specified, all in accordance with sub-clause M0208 (b) of the standard specifications. Full compensation for completing and maintaining, during the defects liability period, all the work shown on the drawings and specified in the standard specifications and project specifications and for all the risks, obligations and responsibilities specified in the general conditions of contract, special conditions of contract, standard specifications and project specifications shall be considered as provided for collectively in the items of payment given in the bill of quantities, except in so far as the quantities given in the bill of quantities are only approximate.
- 5 The Bidder shall fill in a rate or a lump sum for each item where provision is made for it even where no quantities are given. Items against which no rate or lump sum has been entered in the tender will not be paid for when the work is executed, as payment for such work will be regarded as being covered by other rates or lump sums in the bill of quantities.

The Bidder shall fill in a rate against all items where the words "rate only" appear in the amount column. Although no work is foreseen under such item and no quantities are consequently given in the quantity column, the tendered rate shall apply should work under this item actually be required. Tenders should note the provisions of paragraph 12 of this preamble.

If the tender should group a number of items together and tender one lump sum for each group of items, this single tendered lump sum shall apply to that group of items and not to each individual item, or should he indicate that full compensation for any item has been included in the rate for another item, the rate for the item included in another item shall be deemed to be nil.

The tendered lump sums and rates shall be valid irrespective of any change in the quantities during the execution of the contract.
- 6 The works executed are measured for payment in accordance with the methods described in the contract documents under the various payment items, notwithstanding any custom to the contrary.
- 7 The amount of work or the quantities of material stated in the bill of quantities shall not be considered as restricting or extending the amount of work to be done or quantity of material to be supplied by the contractor.
- 8 The statement of quantities of material or the amount of work in the bill of quantities shall not be regarded as authorisation for the contractor to order material or to execute work. The contractor shall obtain the engineer's detailed instructions for all work before ordering any materials or executing work or making arrangements in this regard.
- 9 The short descriptions of the payment items in the bill of quantities are only given to identify the items and to provide specific details. Reference shall, inter alia, be made to the drawings, standard specifications, project specifications, general conditions of contract and special conditions of contract for more detailed information regarding the extent of work entailed under each item.
- 10 The provisions of clause 6.6 of the general conditions of contract shall apply to provisional sums and prime cost sums.

- 11 Where the Bidder elect to confirm the tender offer as tendered, correct the errors as follows:
 If bills of quantities or pricing schedules apply and there is an error in the line item total resulting from the product of the unit rate and the quantity, the line item total shall govern and the rate shall be corrected. Where there is an obviously gross misplacement of the decimal point in the unit rate, the line item total as quoted shall govern, and the unit rate shall be corrected.
 Where there is an error in the total of the prices either as a result of the other corrections required by this checking process or in the Bidders addition of prices, the total of the prices shall govern and the Bidder will be asked to revise selected item prices (and their rates if bill of quantities apply) to achieve the tendered total of the prices.
- 12 A tender may be rejected if the unit rates or lump sums for some of the items in the bill of quantities are, in the opinion of the employer, unreasonable or out of proportion, and if the Bidder fails, within a period of seven (7) days of having been notified in writing by the employer to adjust the unit rates or lump sums for such items, to make such adjustments.
- 13 The units of measurement indicated in the bill of quantities are metric units
 The following abbreviations are used in the bill of quantities:
- | | | |
|----------------------|---|-----------------------|
| mm | = | millimetre |
| m | = | metre |
| km | = | kilometre |
| km-pass | = | kilometre-pass |
| m ² | = | square metre |
| m ² -pass | = | square metre pass |
| ha | = | hectare |
| m ³ | = | cubic metre |
| m ³ km | = | cubic metre kilometre |
| l | = | litre |
| kl | = | kilolitre |
| kg | = | kilogram |
| t | = | ton (1000 kg) |
| No | = | number |
| mn | = | meganewton |
| mn-m | = | meganewton-metre |
| % | = | per cent |
| kW | = | kilowatt |
| Kn | = | kilonewton |
| PC sum | = | prime cost sum |
| Prov sum | = | provisional sum |
- 14 All rates and sums of money quoted in the bill of quantities shall be in rands and whole cents. Fractions of a cent shall be discarded
- 15 The item numbers appearing in the bill of quantities refer to the corresponding item numbers in the standard specifications. Item numbers prefixed by the letter M refer to payment items described under part M of the project specifications, those with B to payment items described under part B, and so on for further parts of the project specifications.
16. Labour intensive items are highlighted in the bills of quantities for the payment items relating to labour intensive works.
- 16.1 Those parts of the contract to be constructed using labour intensive methods have been marked in the bills of quantities with the letters LI against every item so designated. The works or parts of the works so designated are to be constructed using labour intensive methods only. The use of plant to provide such works, other than plant specifically provided for in the scope of work, is a variation to the contract. The letters marked with LI are **not necessarily an exhaustive list** of all items which must be done by hand, and this clause does not override any of the requirements in the generic labour intensive specification in the Scope of Works.
- 16.2 Payment for items which are designated to be constructed using labour intensively in the schedule of quantities will not be made unless they are constructed using labour intensive methods. Any unauthorised use of plant to carry out work which was to be done labour intensively will not be condoned and any work so constructed will not be certified for payment. If a contractor, through innovation on other activities, achieved the Local labour content target, but he did not perform all LI-marked activities through labour, he will not be penalized. However, if a contractor did not achieve the Local labour content target and constructed a LI-marked activity through other means, he will not be paid for that activity. Any non-payment for such works shall not relieve the Contractor in any way from his obligations either in contract or in delict.

17. All cost for formal training to the targeted workforce (amongst others: allowances, wages, administration, transport, etc) shall be deemed to be included in the rates for Labour Intensive items.

C2.2 BILL OF QUANTITIES

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M1200	REPAIR OF POTHOLES, EDGE BREAKS AND SURFACE FAILURES	C.39
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M2100	REPAIR AND MAINTENANCE OF INLET AND OUTLET STRUCTURES.....	C.42
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PART C3: SCOPE OF WORK

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PART C3: SCOPE OF WORK

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PART C4 : SITE INFORMATION

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C3.1 DESCRIPTION OF WORKS

C3.1.1 Employer's Objectives

LDPWRI's objective is to maintain the following roads within the Municipality for a period of twelve months.

Item No.	Road No.	Description.	Total Length
1	D27	D2534 - Marble Hall	4.96
2	D1458	Leeufontein	10.5
3	P207/1	Seyabuswa - N11 (Marble Hall)	24.7
4	D1819	N11-D1458	1.49
5	D2534	Marblehall	29.66
6	D2664	D2900-Boundary	11.25
7	D2900	D2919-P207/1	20.82
8	D3057	D4356-Tompi Seleka (D4100)	1.88
9	D3600	Elandskraal	21.56
10	D4100	D1458-D4360	33.54
11	D4285	D4100-Mabitwana B	22.91
12	D4356	D2534(Arabie)-D4100(Phetwana)	5.47
13	D4370	D4295-D4100	10
Total			198.74

C3.1.2 Overview and Location of Works

The employer's objective is to provide maintenance to road infrastructure, using labour intensive methods. The scope of work for this project is a routine maintenance of roads within the Municipality for a period of twelve (12) months. The contractor will engage community households headed by women and or youth who belong to the poorest of the poor in the community. Beneficiaries will be employed from communities located within the municipality through the relevant structures of the Municipality, and will work a minimum of three (3) days per week.

The contractor shall be responsible for reporting the progress done on site on a weekly basis on the prescribed format. A contract will be entered between the Contractor and **unskilled labourers (beneficiaries)**. **The number of labourers will be calculated at 35% of schedule A of the bill of quantities.** There shall be a penalty for non-compliance as indicated in the Tender Data.

C3.1.3 Extent of Works

The following remedial actions to be executed on this contract:

- a) surface patching with medium continuously graded asphalt
- b) clearing of excessive vegetation within the road reserve or as directed by the Employer's representative.
- c) in-situ shoulder reconstruction with material obtained from the existing road-prism and servitude or an approved borrow-pit.
- d) grass cutting within the road reserve (from fence to fence).
- e) Cleaning of existing and reconstruction of drainage structures.
- f) Replacement of road side furniture.
- g) application of a texture slurry (medium graded) in areas where stone loss occurs.
- h) repairing edge breaks with medium continuously graded asphalt.
- i) protection of road embankment.
- j) and other maintenance activities to be identified by the Employer's Agent.

EXISTING INTERSECTIONS

- a) It is proposed to construct concrete edge-beams on most intersections and farm-accesses as required.

C3.1.5 Temporary Works

It is proposed that all patch and reseal work be undertaken under stop/go traffic accommodation during daylight hours. A maximum closure distance of 2 km is proposed, with a maximum of 2 closures along the road length. The minimum distance between consecutive closures must be at least 4 km.

If there is a section to be reconstructed, it is proposed to accommodate the traffic on the gravel shoulders (left and right) of the road in order to avoid half-width construction. A maximum closure distance of 2 km is proposed, with a maximum of 2 closures along the road length. The minimum distance between consecutive closures must

be at least 4 km.

C3.1.6

General Information

C3.1.6.1

Drawings

Drawings will be provided on an on-going basis by the Employer's Agent. There are no drawings applicable for the purpose of tendering.

C3.1.6.2

Power, Water Supply and Other Services

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

C3.1.6.3

Contractor's Camp Site and Security

The contractor shall make his own arrangements regarding the establishment of a camp site and housing for his construction personnel and all regulations stipulated by the local authority shall be adhered to.

It is anticipated that the contractor's choice of a camp site will be influenced by the availability of telephone and electrical connections as well as the supply of potable water. The contractor shall be responsible for the security of his personnel and constructional plant on and around the site of the works and for the security of his camp, and the employer will consider no claims in this regard.

C3.1.6.4

Additional Requirements for Construction Activities

C3.1.6.4.1 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.

C3.1.6.4.2 The contractor shall submit proposals in connection with directional signs to the Employer's Agent for approval.

C3.1.6.5

Programme Requirements for Construction Activities

The contractor shall programme his activities to be suitable in terms of his resources to complete the contract inside the stipulated time period.

C3.1.6.6

Construction in Confined Areas

It may be necessary for the contractor to work in confined areas. In certain areas the width of the fill material and pavement layers may reduce to zero and the working space may be confined. The method of construction in these confined areas depends on the contractor's construction plant. However, the contractor must note that measurement and payment will be in accordance with the specified cross-sections and dimensions, irrespective of the method used to achieve these cross-sections and dimensions, and that the rates and amounts tendered will be deemed to include full compensation for any special equipment or construction methods or for any difficulty encountered in working in confined areas and narrow widths, and at or around obstructions, and that no extra payment will be made nor will any claim for payment be considered on account of these difficulties.

C3.1.7

Labour Regulations

C3.1.7.1

Payment for the labour-intensive component of the works

Payment for items which are designated to be constructed using labour intensively in the schedule of quantities will not be made unless they are constructed using labour intensive methods. Any unauthorised use of plant to carry out work which was to be done labour intensively will not be condoned and any work so constructed will not be certified for payment. If a contractor, through innovation on other activities, achieved the Local labour content target, but he did not perform all LI-marked activities through labour, he will not be penalized. However, if a contractor did not achieve the Local labour content target and constructed a LI-marked activity through other means, he will not be paid for that activity. Any non-payment for such works shall not relieve the Contractor in any way from his obligations either in contract or in delict.

C3.1.7.2

Applicable labour laws

1. Ministerial Determination 4: Special Public Works Programmes - Government Gazette No. 35310 3 Of 04 May 2012 as amended.
2. Code of Good Practice for Employment and Conditions of Work For Expanded Public Works Programmes - Government Gazette No. 34032 of 18 February 2011 as amended.

C3.2 ENGINEERING

C3.2.1

Design

- (a) The **Employer** is responsible for the design of the permanent Works should it be necessary in the contract.
- (b) The **Contractor** is responsible for the design of the temporary Works and their compatibility with the permanent Works.
- (c) The **Contractor** shall supply all details necessary to assist the Employer's Agent in the compilation of the as-built drawings.

C3.2.2

Employer's Design

- (a) Detail description of Works (C3.1.3)

C3.2.3

Contractor's Design

Where contractor is to supply the design of designated parts of the permanent Works or temporary Works he shall supply full working drawings supported by a professional engineer's design certificate.

C3.2.4

Design procedures

All designs and modifications thereto shall be communicated in writing and the contractor and engineer shall maintain master lists to record and track all transactions.

C3.4 CONSTRUCTION

C3.4.1

STANDARD SPECIFICATIONS

Tender

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Part C2: Scope of Work

- (a) The following specifications shall apply for the construction of the Works.
(i) The COLTO Standard Specifications for Road and Bridge Works for State Road Authorities (1998).

The contractor may purchase copies of Volume (i) from the South African Institution of Civil Engineers.

	SAICE	Tel : (011) 805-5947
Waterfall Park	/ Postnet Suite 81	Fax : (011) 805-5971
Howick Gardens	/ Private Bag X65	
Vorna Valley	/ Halfwayhouse	Contact Person : Angeline Aylward
Becker Street	/ 1685	
Midrand		

- (b) SABS/SANS or BS Specifications and Codes of Practice

Wherever any reference is made to the South African Bureau of Standards (SABS) and the British Standards Specification (BSS) in either these Bill of Quantities or the Specification of Materials and Methods to be Used (OOG-001E), this reference shall be deemed to read "SABS or equivalent standard" and BS or equivalent standard" respectively.

- (c) Various other specifications specified in the COLTO Standard Specifications or the Project Specifications.

(d) Latest **Sabita Manual**, Manual 25 entitled "*Quality Management in the Handling and Transport of Bituminous Binders*".

- (e) The South African National Roads Agency Limited - Standard Specification for Routine Road Maintenance

C3.4.2 PROJECT SPECIFICATIONS RELATING TO STANDARD SPECIFICATIONS

C3.4.2.1 General Conditions of Contract Referred to in the Standard Specifications

The references to the General Conditions of Contract appearing in the COLTO Standard Specifications refer to the COLTO General Conditions of Contract which is superseded in this contract by the General Conditions of Contract for Construction Works 2015 3rd edition.

C3.4.2.2 Amendments to the Standard Specifications

There are no amendments to the Standard Specifications as issued by the Committee of Land Transport Officials (COLTO).

C3.4.2.3 Project Specifications Relating to Standard Specifications

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

In certain clauses the standard specifications allow a choice to be specified in the project specifications between alternative materials or methods of construction and for additional requirements to be specified to suit a particular contract. Details of such alternatives or additional requirements applicable to this contract are contained in this part of the project specifications. It also contains some additional specifications and amendments of the standard specifications required for this particular contract.

The number of each clause and each payment item in this part of the project specifications consists of the prefix B followed by a number corresponding to the number of the relevant clause or payment item in the standard specifications. The number of a new clause or a new payment item, which does not form part of a clause or a payment item in the standard specifications and is included here, is also prefixed by B followed by a new number. The new numbers follow on the last clause or item number used in the relevant section of the standard specifications.

Clauses and pay items referring to labour intensive methods are prefixed by LI in the project specifications.

Clauses and pay items referring to emerging contractors are prefixed by E in the project specifications.

C3.4.3 Requirements of Expanded Public Works Programme EPWP

Special Project Specification

As much as is economically feasible all work shall be implemented by employing Labour Intensive Construction methods. Over and above the normal Building and Allied works to be implemented by employing skilled and unskilled labour the works specified in the "Guidelines for the Implementation of Labour-Intensive Infrastructure Projects under the Expanded Public Works Programme (EPWP)" shall be undertaken using Labour Intensive Construction methods.

C3.4.4 Employment of Unskilled and Semi-Skilled Workers in Labour Intensive Works

Requirements for the sourcing and engagement of labour:

C.3.4.4.1. Unskilled and semi-skilled labour required for the execution of all labour intensive works shall be engaged strictly in accordance with prevailing legislation and SANS 1914-5, Participation of Targeted Labour.

C.3.4.4.2. the minimum rate of pay for unskilled labour for this contract is R 110.00 per task or per day and R130.00 for semiskilled (team leaders)

C.3.4.4.3. Tasks established by the contractor must be such that:

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

C.3.4.4.4. the contractor must revise the time taken to complete a task whenever it is established that the time taken to complete a weekly task is not within the requirements of 3.4.4.3.

C.3.4.4.5. the Contractor shall, through all available community structures, employ the local labourers (beneficiaries). Preference shall be given to people who come from poor households:

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

C.3.4.4.6. the Contractor shall endeavour to ensure that the expenditure on the employment of temporary workers is in the following proportions:

- a) 55 % women;
- b) 40% youth who are between the ages of 16 and 35;
- c) 2% on persons with disabilities.

Specific provisions pertaining to SANS 1914-5

C.3.4.5 Definitions

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

C.3.4.5.1 Contract participation goals

C.3.4.5.2. there is no specified contract participation goal for the contract. The contract participation goal shall be measured in the performance of the contract to enable the employment provided to targeted labour to be quantified.

C.3.4.5.3. the wages and allowances used to calculate the contract participation goal shall, with respect to both time-rated and task rated workers, comprise all wages paid and any training allowance paid in respect of agreed training programmes.

C.3.4.5.4 terms and conditions for the engagement of targeted labour further to the provisions of clause 3.3.2 of SANS 1914-5, written contracts shall be entered into with targeted labour.

C.3.4.5.5. variations to SANS 1914-5

C.3.4.5.6. the definition for net amount shall be amended as follows: Financial value of the contract upon completion, exclusive of any value added tax or sales tax which the law requires the employer to pay the contractor.

C.3.4.5.7. the schedule referred to in 5.2 shall in addition reflect the status of targeted labour as women, youth and persons with disabilities and the number of days of formal training provided to targeted labour.

STANDARD SPECIFICATION FOR ROUTINE ROAD MAINTENANCE

ISSUED BY:

**THE CHIEF EXECUTIVE OFFICER
SOUTH AFRICAN NATIONAL ROADS AGENCY LIMITED
P O BOX 415
PRETORIA
0001**

STANDARD SPECIFICATION FOR ROUTINE ROAD MAINTENANCE

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M0142 WATERWAY STRUCTURE

Unless inconsistent with the context, in these specifications, the following terms, words or expressions shall have the meanings hereby assigned to them.

M0101 BORROW AREA

An area within designated boundaries, approved for the purposes of obtaining borrow material. A borrow pit is the excavated pit in a borrow area.

M0102 BORROW MATERIAL

Any gravel, sand, soil, rock or ash obtained from borrow areas, dumps or sources other than cut within the road prism and which is used in the construction of the works. It shall not include crushed stone or sand obtained from commercial sources.

M0103 BRIDGE

A structure erected over a depression, river, watercourse, railway line, road or other obstacle for carrying motor, railway, pedestrian or other traffic or services and having a length of 6m or more, measured between the abutment faces along the center line of the road at girder-bed level, except that road-over-rail or rail-over-road structures are always classed as bridges.

M0104 CARRIAGEWAY

The surface normally traversed by vehicles and which consists of one or a number of contiguous traffic lanes, including auxiliary lanes and shoulders.

M0105 CATCHWATER DRAIN OR BANK

A longitudinal drain or bank outside the road prism for diverting water that would otherwise flow onto the road prism.

M0106 CONTRACTOR'S EQUIPMENT

All apparatus, machinery, vehicles and other things required for the execution and completion of the Works and the remedying of any defects. However, Contractor's equipment excludes temporary works, Employer's equipment (if any), equipment, materials and any other things intended to form or forming part of the Permanent Works.

M0107 COST

All expenditure reasonably incurred (or to be incurred) by the Contractor, whether on or off the Site, including overhead and similar charges, but does not include profit.

M0108 CULVERT

A structure other than a bridge, which provides an opening under the carriageway or median for drainage or other purposes.

M0109 CUT

Cut shall mean all excavations from the road prism, including side drains, excavations for crossroads, interchanges and, where classified as cut, excavations for open drains.

M0110 DEBRIS AND LITTER

Debris and litter is defined as all foreign articles which, *inter alia*, shall include litter, branches, split levels, concentrated piles of refuse, animal carcasses, dangerous objects, stones larger than 75mm but smaller than 300mm, tyres and stripped tyre treads, posters and illegal signs less than 0,5m², spilled loads, concentrated piles of refuse, animal carcasses, branches, trees, dangerous objects and accident debris.

M0111 EDGE BREAK

Edge break is defined as the failure of the edge of the surfacing up to a minimum width of 300mm from the continuous edge of surfacing.

M0112 EMERGENCY SERVICES

Emergency services means the police service, fire and rescue services, ambulance services or any other emergency service provided.

M0113 EMERGENCY WORKS

Any repair needed without delay for the purpose of ensuring public safety, relieving unnecessary traffic congestion, or maintaining structural integrity of a part of the road.

M0114 EMERGENCY STANDBY TEAM

The team will assist with emergency accidental events to normalise, restore or safeguard any dangerous area in order for the safe passage of any traffic using the road.

The team will be on 24-hour standby and located optimally to minimise the responding time for emergencies on weekdays, weekends and public holidays

M0115 GENERAL CONDITIONS OF CONTRACT

The appropriate edition of the General Conditions of Contract for Construction issued by General Conditions of Contract for Construction Works, 2015 2nd edition, together with any special conditions of contract forming part of the contract.

M0116 GENERAL MOWING AND REMOVAL OF GRASS

General mowing is the cutting of planted or natural grasses and vegetation by means of mechanical mowers or by hand along the main carriageway in the boundaries of the road reserve including waterways outside the fence; intersections and the road reserve of cross roads up to the limits of the South African National Roads Agency responsibility. It includes the removal of the grass cuttings by means of mechanical balers or by hand.

M0117 GOODS

Contractor's equipment, materials, plant and temporary works, or any of them as appropriate.

M0118 INLET AND OUTLET DRAINS

Channels leading into or discharging from culverts, stormwater conduits and minor bridges.

M0119 MARKER BOARDS

Marker boards (where applicable) are placed next to the shoulder of the road and all distances are horizontally measured along the centreline of the road.

M0120 MATERIALS

Things of all kinds (other than Plant) intended to form or forming part of the Permanent Works, including the supply-only materials (if any) to be supplied by the Contractor under the contract.

M0121 MEDIAN DRAIN

A longitudinal drain situated between the inner shoulders of a dual carriageway.

M0122 MITRE DRAIN AND BANK

A drain constructed at an angle to the centre line of the road to divert water from a side drain. Mitre drains include mitre banks placed across the side drains.

M0123 NOMINATED SUBCONTRACTOR

Not applicable

M0124 PAVEMENT FAILURES

Pavement failure consists of a combination of rutting, cracking and displacement of the road surface and base layer usually accompanied by disintegration of the surfacing.

M0125 PLANT

The apparatus, machinery and vehicles intended to form or forming part of the Permanent Works.

M0126 POTHOLE

Potholes are surface failures, which extend into the base layer forming a hole. Normally such failures would be less than 0,5m² in area, are isolated and are not associated with displacement.

M0127 ROAD RESERVE

The entire area included by the boundaries of a road as proclaimed. It includes the intersections and the road reserve of cross roads as described in the Project Specifications.

M0128 REPAIR

Repair means all action required in rectifying a defect.

M0129 RESPONSE TIME

Response time is defined as the period from the time of which an instruction is received by the Contractor from the Employer's Agent, to the time of reporting at an indicated place.

M0130 ROUTINE ROAD MAINTENANCE

Routine road maintenance means the ongoing works and activities performed or to be performed to ensure public safety, repair any defects or maintain the required condition of the site.

M0131 SERVICES

Cables, pipes or other structures to provide *inter alia*, conduits for electricity, telephone and telegraph connections, water, sewage and gas.

M0132 SHOULDER

(a) Paved shoulder: The surfaced area between the outside edge of the travelled way and the shoulder breakpoint.

(b) Gravel shoulder: The upper pavement layer lying between the outside edge of the base and the shoulder breakpoint.

M0133 SHOULDER BREAKPOINT

The line along which the extended flat planes of the surface of the shoulder and the outside slope of the fill and pavement intersect. This edge is normally rounded to a predetermined radius.

M0134 SHOULDER MOWING AND REMOVAL OF GRASS

Shoulder mowing is the cutting of planted or natural grasses and vegetation by means of mechanical mowers or by hand. Shoulder mowing is limited to the cutting of strips adjacent to the road surface, grassed side drains, culvert inlets and outlets, areas around trees and shrubs, the median, interchanges and the road reserve of cross roads up to the limits of the South African National Roads Agency responsibility. It includes the removal of the grass cuttings by means of mechanical balers or by hand.

M0135 SIDE DRAIN

An open longitudinal drain situated adjacent to and at the bottom of cut or fill slopes.

M0136 SITE

The places where the Permanent Works are to be executed and to which Plant and Materials are to be delivered, and any other places as may be specified in the contract as forming part of the site.

M0137 SPOIL (MATERIAL)

Material originating from construction operations and which is not utilised for construction purposes.

M0138 SUBSOIL DRAINAGE SYSTEM

A system of subsoil drainage pipes (including any permeable material) constructed to intercept and remove subsoil water.

M0139 SURFACE FAILURES

Surfacing failure often proceeded by map or diamond-like cracking is the breaking up of only the surfacing layer (seal or asphalt) exposing but not affecting the underlying layer. The resulting depression is usually of uniform thickness. Surfacing failures are defined as being 2m or less in area. Surface failures exceeding 2m in area shall be considered to be pavement failures.

M0140 TRAFFIC SAFETY OFFICER

Competent member of the Contractor's staff which is nominated to act as a Traffic Safety Officer with specific responsibilities to ensure that the temporary traffic accommodation requirements comply with the specifications.

M0141 VERGE

The area between the outer edge of the road prism and the boundary of the road reserve.

M0142 WATERWAY STRUCTURE

A structure is classified as a waterway structure when the inlet area of the structure is bigger than 5m

SERIES M0000: GENERAL

SECTION M0200: GENERAL REQUIREMENTS AND PROVISIONS

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M0201 SCOPE

This section covers matters, which relate to a routine road maintenance contract as a whole. Definitions, phrases or wording which would otherwise require repetition in other sections of the specifications are also covered by clauses in this section. Matters covered by the General Conditions of Contract for Construction Works, 2015 2nd edition are not repeated in this section, except where necessary for providing more detailed information.

M0202 SERVICES

The moving and relocation of existing utility services shall not be required under a Routine Road Maintenance Contract. The positions of existing underground utility services are normally marked with appropriate markers but the Contractor shall ascertain from the Employer's Agent before the commencement of any excavation through the road prism or in the road reserve whether underground services exist in the vicinity of the excavation.

The Contractor shall take all necessary reasonable precautions to protect known underground services as well as existing overhead services during the execution of maintenance activities. The Contractor will be held responsible and liable for any damage caused to known services, unless proof is provided that all reasonable precautions were taken and that the damage caused was as a direct result of the position of the service deviating by more than one metre from that of the position reasonably deduced from investigations made.

No payment will be made for inconvenience to the Contractor due to services crossing the site or any authority working on such services, nor will delays caused by such work be accepted as a basis for claiming an extension of time for completing the works.

M0203 PROGRAMME

Due to the nature of maintenance work, certain items of work shall be carried out as a matter of routine. In certain emergency cases, the Contractor will be called upon to do remedial work at very short notice, in which case the Contractor shall proceed to carry out the work without delay and report to the Employer's Agent in writing as soon as practically possible on the extent of the work carried out.

Apart from emergency items of work and items of work ordered by the Employer's Agent from time to time, the Contractor shall in terms of subclause 5.6.1 of the General Conditions of Contract for Construction Works, 2015 3rd edition submit to the Employer's Agent for approval a programme showing the order of procedure and method in which proposals are put forward to carry out the maintenance work which are of a routine nature.

The Contractor shall base the programme of work on the information included in the contract documents.

The Contractor shall submit, at the end of each month or at the monthly meeting, a detailed programme for the next three months to follow. The detailed programme shall include ad hoc activities and work not of routine nature. With the detailed programme the Contractor will submit a breakdown of the cash flow on a monthly basis.

The Employer's Agent's approval of any programme shall have no contractual significance other than that the Employer's Agent would be satisfied if the work was carried out according to such programme and that the Contractor undertakes to carry out the work in accordance with the programme, nor shall it limit the right of the Employer's Agent to instruct the Contractor to vary the programme should circumstances necessitate it. The above shall not be taken as limiting of the Contractor's right to claim for damages which may be fairly entitled to in terms of the General Conditions of Contract for Construction Works, 2015 3rd edition for delay or disruption of activities.

M0204 WORKMANSHIP AND QUALITY CONTROL

The onus rests with the Contractor to produce work which conforms in quality and accuracy of detail to all the requirements of the specifications and the drawings at the Contractor's own expense, institute a quality control system and provide experienced engineers, foremen, surveyors, materials technicians, other technicians and other technical staff, together with all transport, instruments and equipment, to ensure adequate supervision and positive control of the works at all times.

The Contractor shall determine the frequencies at which quality or process control tests are to be undertaken. The Employer's Agent will, however, undertake acceptance control tests for the judgement of workmanship and quality of products without accepting any responsibilities vested with the Contractor in terms of the contract.

The cost of all supervision and process control, including testing, so carried out by the Contractor shall be deemed to be included in the rates tendered for the related items of work, except that the cost of certain tests and the provision of certain items of testing and sampling equipment shall be paid for separately as provided for in those sections of the specifications where this applies.

On completion of every part of the work and submission thereof to the Employer's Agent for examination, the Contractor shall submit to the Employer's Agent the results of all relevant tests, measurements and levels indicating compliance with the specified requirements.

M0205 SETTING-OUT OF WORK AND PROTECTION OF BEACONS

The Contractor shall comply with all legal provisions with regard to surveying and setting out of work as stipulated in the General Conditions of Contract for Construction Works, 2015 3rd edition.

The Employer's Agent shall reference all positions of road surface repairs, existing roadmarkings, drainage structures and side drains and any roadside furniture.

Where setting out is required, the Employer's Agent will point out the relevant beacons, NRB beacons, benchmarks, pegs and end of road reserve pegs at intersections to the Contractor. The Contractor will check that they have not been disturbed and are true with regard to position and level and maintained them to be in a satisfactory condition. If beacons have been destroyed, disturbed or damaged, the Employer's Agent will arrange to have new beacons installed. A beacon that has been disturbed shall not be used unless its true position and level has been re-established and the Employer's Agent has verified the new values.

Setting out shall not be measured and paid for directly and compensation for the work involved in setting out shall be deemed to be covered by the rates tendered and paid for the various items of work included under the contract.

M0206 NOTICES, SIGNS AND ADVERTISEMENTS

The Contractor shall not erect any signs, notices or advertisements on or along the works or the site of the works without the written approval of the Employer's Agent.776G

The Contractor shall supply and erect contract information signs at each end of the works on approved locations as specified or as shown on the drawings.

A special payment item is incorporated in the Schedule of Quantities relating to payment for the signboards.

These signs are to be erected not later than one month after the Contractor has been given access to the site.

The signboards shall be painted with the legend in English.

No signboards other than those specified above will be permitted on or adjacent to the works, except that the Contractor may permit each Subcontractor to display one signboard of less than 2m at the Contractor's works office.

The Employer's Agent shall have the right to have any sign, notice or advertisement moved to a better position or to have it removed from the site of the works if it should in any way prove unsatisfactory, inconvenient or dangerous to the general public.

The Contractor, upon completion of the works, shall remove all advertisements, notices and temporary signs.

M0207 MEASUREMENT

(a) Units of measurements

All work shall be measured in accordance with the SI system of metric units.

(b) Schedule of Quantities

The quantities set out in the Schedule of Quantities are estimated quantities and are used for the comparison of tenders in awarding the contract. It must be clearly understood that only the actual quantities of work done or materials supplied shall be measured for payment, and that the scheduled quantities may be increased or decreased as necessary.

(c) Measurement of completed work

(i) All distances along the centre line of a road are horizontal distances and

M0208 PAYMENT

these distances will be used in calculating the quantities of fill, pavement layers and shoulders, for payment purposes. Marker boards are generally placed at 200m intervals on the side of the road. All cross-sections shall be taken in a vertical plane. The Contractor shall take cross-sections, where necessary, for determining quantities of completed work. Cross-sections shall be submitted to the Employer's Agent for approval before finalising quantities.

(ii) All materials, which are specified to be measured in the vehicle, shall be hauled in vehicles of such type and size that the actual contents may be readily and accurately determined. Unless all vehicles are of uniform capacity, each vehicle shall bear a plainly legible identification mark indicating its specific approved capacity.

(iii) The quantity of bituminous and similar materials to be paid by volume shall be measured at the temperature of application.

(iv) Structures shall be measured to the neat lines shown on the drawings,

(a) Contract rates

including any changes ordered in writing by the Employer's Agent, and shall include any reinforcing steel and minor ducts up to 150mm in diameter. In computing the final contract amount, payments shall be based on actual quantities of authorised work carried out in accordance with the specifications and drawings. The tendered rates shall apply, subject to the provisions of the General Conditions of Contract for Construction Works, 2015 2nd edition irrespective of whether the actual quantities are more or less than the Schedule of Quantities.

Where the Contractor has entered no rate or price against a pay item in the Schedule of Quantities, it shall be interpreted to mean that the Contractor does not require any compensation for such work. Where, however, a pay item described in these specifications or in the Project Specifications does not appear in the Schedule of Quantities, the Contractor will receive reasonable compensation for such work if required, unless anything to the contrary has been determined elsewhere.

(b) Rates to be inclusive

The Contractor shall accept the payment provided in the contract and represented by the rates tendered by him in the Schedule of Quantities, as payment in full for executing and completing the work as specified, for procuring, furnishing, placing and installing all materials, for procuring and providing labour, supervision, tools and equipment, for wastage, transport, loading and off-loading, handling, maintenance, temporary work, testing, quality control including process control, overheads, profit, risk and other obligations and for all other incidentals necessary for the completion of the work. Value Added Tax (VAT) shall be excluded from the tendered rates and sums and provided for as a lump sum in the summary of the Schedule of Quantities.

The Contractor shall note that the cost of all work and materials for minor construction details that are inherently necessary for the proper execution of the work item and as such, are not described in the Schedule of Quantities shall be included in the tendered rate for the work item.

This Clause shall be applicable in full to all pay items, except where these requirements may have been specifically amended in any case.

(c) Meaning of certain phrases in payment clauses

(i) "Supply, procuring and furnishing(pay item mentioned) material"

Where any of the words "supply", "procure" or "furnish" (material) are used in the description of a pay item, it shall mean the supply and delivery to the point of use of all materials of any kind required for the work covered by the particular pay item, including all tax, purchase costs, claims, damages, royalties and transport costs involved, but excluding overhaul. In the case of borrow materials, stone and sand, it shall also include all negotiations with the owners concerned, excavating, producing, preparing, processing, testing, hauling and delivering the material to the point of use, as well as the construction, repair, maintenance and making good after completion of all access roads, and all work required for opening, using and finishing off borrow pits, which is not covered by other pay items in the Schedule of Quantities.

(ii) "Placing material"

(d) Pay items

The phrase "placing material" shall mean the off-loading, spreading, blending, processing, watering, mixing, shaping and compacting (where specified) of the material in the road prism, subbase, base, shoulders, banks and bypasses, as well as the procurement, furnishing, application and admixing of water; breaking down oversize material, removing oversize material which cannot be broken down, correcting irregular or uneven surfaces or deficient thickness, finishing off to within the specified tolerances, refilling test holes and maintaining the completed work. In the case of asphalt courses and bituminous treatments, it shall also mean the heating and spraying of binder, spreading of aggregate or asphalt mixture, rolling, compacting, finishing off to within the specified tolerances and maintaining the completed work.

The phrase "procuring, furnishing and placing" shall mean "procuring and furnishing" in addition to "placing", all as defined above.

The descriptions under the pay items in the various sections of the specifications, indicating the work to be allowed for in the tendered rates for such pay items, are for the guidance of the Contractor and do not necessarily repeat all the details of work and material required by and described in the specifications.

These descriptions shall be read in conjunction with the relevant specifications and drawings and the Contractor shall, when tendering, allow for the process to be inclusive, as specified in Subclause (b) above.

(e) Materials on site

In terms of the General Conditions of Contract for Construction Works, 2015, 3rd edition payments for materials on site will be authorised only upon submission of documented proof that ownership of the materials is vested in the Contractor, either in the form of receipted invoices or in the form of a certificate to that effect from the supplier.

Unless otherwise stated in the special provisions of contract, the payments for materials on site will be for 80% of the value of such material.

(f) Provisional sums

The Schedule of Quantities may contain certain provisional sums so designated and entered as a preliminary allowance to cover the cost of work, materials, goods or services to be provided by the Contractor but which have not been fully specified or measured, or to cover the cost of unforeseen items of work or contingent expenditure for which no rates are applicable but for which the Contractor is to be paid according to the applicable provisions of the contract.

Work done under a provisional item shall only be executed upon a written order by the Employer's Agent, which order shall also specify the method of payment. The expenditure in respect of a provisional item for work ordered by the Employer's Agent shall be entirely at the Employer's Agent's discretion and any final expenditure in respect of a provisional item may be more, less or equivalent to the amount provided in the Schedule of Quantities.

Payment as specified in the order given by the Employer's Agent shall be according to the General Conditions of Contract for Construction Works, 2015 3rd edition.

No expenditure will be authorised without three quotations and the written approval of the Employer's Agent.

The mark-up fee on any provisional sum item, shall include full compensation for all overheads, profit, management, supervision, handling and other costs incurred for the work done or services provided. The fee shall be paid on the value of the work done or services provided excluding Value Added Tax (VAT).

(g) Rate only items

Opposite an item in the Schedule of Quantities where no quantity is given but a "rate only" is required, the Contractor shall fill in a rate or price which will constitute payment for any work which may be done under this item. Such a "rate only" item is used where it is estimated that little or no work will be required under the item, or where the item is to be considered as an alternative for another item where a quantity is given, or for variations in rates of application or mix proportions.

(h) Payment certificates

With reference to Subclause 6.10.1 of the General Conditions of Contract for Construction Works, 2015 3rd edition the Contractor must submit his Payment Certificate each month. Details of the format are available from the Employer. The Employer has an electronic data capturing programme available that may be used by the Contractor, at his own risk, to prepare the payment certificate in the required format. Any cost arising from the use of the programme, cost of duplicating and delivering copies of the certificate to the Employer's Agent and the Employer shall be borne by the Contractor. The Employer's Agent and the Employer require a total of one (1) original and three (3) sets of A4-sized paper copies.

M0209 TAKING-OVER CERTIFICATE OF THE WORKS

The taking-over certificate of the works in terms of Clause 10 of the General Conditions of Contract for Construction Works, 2015 2nd edition will be issued only if the following sections of the works as may be applicable have, *inter alia*, been duly completed:

- (a) Maintenance of pavement layers and road surfacing, including roadmarkings and installation or cleaning of road studs where applicable.
- (b) Maintenance of aboveground and subsoil drainage structures, drains and channels.
- (c) Maintenance of fencing.
- (d) Maintenance of roadside furniture.
- (e) Maintenance of vegetation, plants, trees, shrubs and grass.
- (f) Maintenance of bridge structures.
- (g) Any responsibility towards emergency assistance.
- (h) Erection of new road signs and repair or cleaning of existing road signs.

M0210 CONTRACTOR'S ACTIVITIES IN RESPECT OF PROPERTY OUTSIDE THE ROAD RESERVE AND OTHER DESIGNATED AREAS

(a) The Contractor shall not enter upon private or government land outside the proclaimed road reserves and other designated areas for the purpose of the contract without written confirmation from the Employer's Agent that:

(i) in the case of borrow areas, the necessary negotiations with the owner of the property have been concluded and permission has been granted for the Contractor to enter upon the land and take material; and

(ii) in the case of temporary access and access roads to borrow areas, the Contractor has complied with the requirements stated below and elsewhere regarding the serving of notice and making of detailed arrangements with the owner for *inter alia* access, compensation and reinstatement.

(iii) in the case of statutory control, the necessary legal procedures have been followed and permission has been granted for the Contractor to enter upon the land and remove the necessary material.

(b) The Contractor shall put in writing all agreements with owners of property outside the road reserve, in respect of the following matters:

(i) the location, extent and use of borrow pits, haul roads, construction roads and bypasses outside the road reserve;

(ii) compensation for land or materials taken or for land temporarily used or occupied;

(iii) reinstatement of property occupied, used, damaged or destroyed or compensation for this in lieu of reinstatement; and

(iv) any similar matter directly concerned with the Contractor's activities on or in respect of private property or services.

These agreements shall be signed by all the parties concerned and be delivered to the Employer's Agent.

Where the Contractor is not able to obtain the owner's agreement in writing, the Contractor shall refer the matter to the Employer's Agent and furnish details in writing of any verbal agreement made.

(c) Where, in addition to any agreement with the owner of any property to be entered upon or temporarily occupied, it is understood or required that the Contractor shall serve notice immediately before actually entering or occupying private property, proper notice shall be given in writing and the Employer's Agent shall be supplied with a copy of such notice and acknowledgement of receipt thereof.

(d) On completion of the Contractor's operations, the Contractor shall obtain from the owner concerned, a written statement:

(i) that the owner is satisfied that the Contractor has fulfilled all obligations under any written agreement or, in the absence of a written agreement; and

(ii) that the owner is satisfied at having received all the entitled compensation and also is satisfied that all property occupied, including borrow pits, haul roads and construction roads, have been properly restored and are in satisfactory condition.

All such statements shall be signed, dated and delivered to the Employer's Agent.

M0211 EXTENSION OF TIME RESULTING FROM ABNORMAL RAINFALL

There will be no extensions of time on this contract due to abnormal rainfall except as provided for below.

Should the Contractor, due to the occurrence of abnormal rainfall be unable to carry out the works, nor meet the rate of progress specified, then the Employer's Agent shall determine the number of days lost due to the occurrence of rain on the critical path method.

A delay caused by inclement weather conditions will be regarded as a delay only if, in the opinion of the Employer's Agent, all progress on an activity of work of which the activity's progress has been specified has been brought to a halt. Delays on working days only (based on a five-day working week) will be taken into account for the extension of time.

The extension of time will be deducted from the time the Contractor completed the works after the specified time.

Should the occurrence of rain delay the Contractor's rate of progress on work programmed at the end of the contract, the provisions in the above paragraph shall still apply. In this instance, the Employer shall have the right to discontinue the work in progress on the date that the contract expires, based upon sole discretion, or grant an extension of time in terms of Subclause 5.12 of the General Conditions of Contract for Construction Works, 2015 3rd edition equal to the number of days lost due to rainfall in respect of the activities affected by the rainfall, as determined by the Employer's Agent.

M0212 INFORMATION FURNISHED BY THE EMPLOYER

Certain information contained in these contract documents or provided separately is offered in good faith but in the circumstances pertaining to the type of information supplied, no guarantee can be given that all the information is necessarily correct or representative of the in situ conditions.

The Employer accepts no liability for the correctness or otherwise of the information supplied or for the resulting damages, where direct or consequential, should it prove during the course of the contract that the information supplied is either not correct or not representative. Any reliance that the Contractor places on this information shall be at the Contractor's own risk.

M0213 PROTECTION OF THE WORKS

The Contractor will be held responsible for all damage to the road and road furniture comprising road signs, road markers, bridges, SOS emergency telephones, guard-rails, fences, drainage systems, trees or shrubs and table or chairs in rest areas, being the result of any act on the Contractor's part or that of the labour force. It is the responsibility of the Contractor to point out to the Employer's Agent any damage to existing road furniture prior to the commencement of work.

The Employer's Agent will make the necessary arrangements to have the damage caused by the Contractor repaired and all costs incurred will be for the Contractor's account.

M0214 REMEDIAL WORK

When, upon examination by the Employer's Agent, any part of the works or any equipment or material is found not to conform to the requirements of the specifications or is at any stage before final acceptance damaged so that it no longer conforms to the requirements of the specifications, the Employer's Agent may order its complete removal and replacement, at the Contractor's expense, with satisfactory work, equipment or material or the Employer's Agent may permit the Contractor to apply remedial measures in order to make good any such defects or damage. The actual remedial measures taken shall at all times be entirely at the Contractor's own initiative, risk and cost, but subject to the Employer's Agent's approval regarding the details thereof.

In particular remedial measures must ensure that the final product is in full compliance with the specifications, shall not endanger or damage any other part of the works and shall be carefully controlled and submitted to the Employer's Agent for examination when completed or at any intermediate stage as may be required.

M0215 WATER

The Contractor himself shall make arrangements for procuring, transporting, storing, distributing and applying the water needed for construction and other purposes, except where otherwise specified. No direct payment will be made for providing water, the cost of which shall be included in the rates tendered for the various items of work for which water is needed

M0216 THE USE OF EXPLOSIVES

Generally the Contractor will be permitted to use explosives for breaking up rock and hard material during excavation, for demolishing existing structures, and for such other purposes for which it may normally be required subject to the following conditions:

(a) The Employer's Agent will have the right to prohibit the use of explosives in cases where, in the Employer's Agent's opinion, the risk of injury to persons or damage to property or adjoining structures is too high. Such action by the Employer's Agent shall not entitle the Contractor to any additional payment for having to resort to other less economical methods of construction unless otherwise provided for in the Project Specifications or the Schedule of Quantities.

(b) The Contractor shall take proper care when excavating in cuts not to loosen, where it can be avoided, any material outside the specified cut line by blasting which would endanger the stability of the slopes. Remedial work shall be carried out as directed by the Employer's Agent at the Contractor's own costs.

(c) Legal provisions in regard to the use of explosives and the requirements of the Inspector of Explosives shall be strictly complied with.

(d) The Contractor shall, at his own cost, make arrangements for supplying, transporting, storing and using explosives.

M0217 THE HANDING-OVER OF THE ROAD RESERVE

The road reserve will be handed over to the Contractor for maintenance, subject to such conditions as may be specified in the Project Specifications regarding matters such as the sequence in which sections will be handed over and must be completed, the maximum total length of bypasses that will be allowed to be in operation at any time, and any other matters relating to the Contractor's use and occupation of the road reserve.

The Employer may from time to time hand over certain sections of road within the maintenance contract road reserve to other Contractors for the rehabilitation of the road. The Contractor can be appointed as a nominated Subcontractor by the rehabilitation Contractor to do the routine road maintenance work as specified for that section of road.

M0218 DAILY RECORDS

The Contractor shall furnish the Employer's Agent daily with records, on forms approved by the Employer's Agent, of work executed by him for each maintenance activity. The records shall include information such as description, location, measurements, equipment and labour hours, where applicable and, all other information the Employer's Agent may require for record and measurement purposes.

M0219 SITE MEETINGS

(a) Progress meetings

The Contractor or an authorised representative shall attend progress meetings on site with representatives of the Employer and the Employer's Agent at dates and times to be determined by the Employer. Such meetings will be held for evaluating the progress of the maintenance contract and for discussing matters pertaining to the contract which any of the parties represented may wish to raise. Such meetings are not intended for discussing matters concerning the normal day-to-day running of the contract. The frequency of these meetings may vary depending on the needs of the contract.

(b) Weekly meetings

The Contractor or an authorised representative and the Employer's Agent's representatives shall meet weekly to discuss progress in relation to the programme and matters concerning the normal day-to-day running of the contract.

M0220 PERMANENT MAINTENANCE TEAMS

The Employer's Agent may require that certain permanent maintenance teams be established on site. These teams shall carry out work as identified or as instructed by the Employer's Agent on a regular basis. The teams shall be monitored on a daily basis.

The emergency standby team/s shall be continuously available and at full strength for the duration of the maintenance contract.

The equipment and labour requirements for each team and the method of payment shall be specified in the Project Specifications.

M0221 LABOUR MAXIMISATION, STRUCTURED TRAINING AND ABE SUPPORT

The Employer requires the active participation of the Contractor with the Government's Reconstruction and Development Programme.

The performance of the Contractor in the abovementioned will be measured in order to monitor the extent to which the Contractor has reached the goals as set out in the Project Specifications. Failure to reach these goals will make the Contractor liable for a penalty as described in the Project Specifications.

M0222 REIMBURSEMENT OF TOLL CHARGES

The Contractor will not be compensated separately for the costs of toll charges arising from the passage of own and Subcontractors' vehicles and equipment through toll plazas for the purposes of executing the works. Any cost associated with toll charges must be included in section M0300: Contractor's Establishment on Site and General Obligations.

M0223 SABS CEMENT SPECIFICATIONS

Where reference is made in this specification or the Project Specifications to the Cement Specifications, e.g. SABS471: Portland cement and rapid hardening Portland cement, it shall be replaced with the following 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 Project Specifications to a different cement type, the following names will apply and the Employer's Agent will confirm the relevant new name from the table below:

Cement Grade	Cement Type	Approximate old product name	New Alpha	New Blue Circle	New NPC	New PPC	New Slagcement
52,5	CEM I	Rapid hardening	Rapid hard	Duracast	Eagle Super	-	-
42,5	RCEM I	Rapid	-	-	-	Rapo	-

		hardening					
42,5	CEM I	OPC *	Portland Cement	Duratech	-	OPC	-
	CEM I	LASRC	-	-	-	LASRC	-
	CEM II A-S	PC 15SL	-	-	Eagle plus	-	-
	CEM III B-S	RH30SL	-	-	Eagle plus	-	-
32,5R	-	-	-	-	-	-	
32,5	CEM II A-V	PC 15FA	All purpose cement	-	-	Surebuild	-
	CEM II A-W	PC 15FA	-	-	-	Surebuild	-
	CEM II A-L	-	All purpose cement	-	-	Surebuild	-
	CEM II B-V or W	PC25FA/PFA C**	-	Structutrete	-	Surecrete	-
	CEM III A	PBFC	-	BFC	Eagle Pro	-	PBFC
	CEM IIIA	RHSL	-	-	-	-	RHSL
22,5	MC 22.5X	PFAC***	Multi purpose cement	Durabuild	-	-	-
	MC22.5X	PFAC***	-	Buildcrete	-	-	-
22,5	MC12,5	Walcrete	Mortar Cement	Wallcrete	-	Masonry	-
	MC12,5	Mortacem	-	-	-	-	-

Notes: * OPC cements previous performed approximately as CEM I 32,5R products
** PC25FA cements under the old standards achieved lower compressive strengths than the OPC's of the time
*** Some PFAC cements meet the new standard for MC 22,5X. Others required modification before meeting the requirements for MC 22,5X.

M0224 MEASUREMENT AND PAYMENT

M0200 GENERAL REQUIREMENTS AND PROVISIONS

Item Unit

M020.01 Information sign boards

(a) Type 1 (large) number (No)

(b) Type 2 (small) number (No)

The unit of measurement shall be the number of signs supplied in accordance with the specifications, drawings and the Employer's Agent's instructions.

The tendered amount shall include full compensation for supply, transport, erection supports, material and maintaining the sign for the duration of the contract and final removal at the end of the contract.

Item Unit

M020.02 Compensation to landowners

(a) Provisional sum for compensation provisional sum to landowners (Prov Sum)

(b) The Contractor's overhead charges and profit in respect of sub-item M020.02 (a) above percentage (%)

Measurement and payment shall be in accordance with the provisions of GCC 2015, 3rd edition. The tendered percentage is a percentage of the amount actually spent under sub-item M020.02 (a), which shall include full compensation for the overhead charges and profit of the Contractor.

Item Unit

M020.03 Advertising cost

(a) Provisional sum for the cost of advertising provisional sum (Prov Sum)

Tender

Part C2: Scope of Work

(b) The Contractor's overhead charges and profit in respect of sub-item M020.03 (a) above percentage (%)

Measurement and payment shall be in accordance with the provisions of the GCC 2015, 3rd edition. The tendered percentage is a percentage of the amount actually spent under sub-item M020.03 (a), which shall include full compensation for the overhead charges and profit of the Contractor.

Item	Unit
M020.04 Project Liaison Officer	
(a) Provisional sum for the cost of PLO	provisional sum (Prov Sum)
(b) The Contractor's overhead charges and profit in respect of sub-item M020.04 (a) above	percentage (%)

Measurement and payment shall be in accordance with the provisions of the GCC 2015, 3rd edition. The tendered percentage is a percentage of the amount actually spent under sub-item M020.04 (a), which shall include full compensation for the overhead charges and profit of the Contractor.

Payment shall be made monthly on approval by the Employer's Agent.

SERIES M0000: GENERAL

SECTION M0300: CONTRACTOR'S ESTABLISHMENT ON SITE AND GENERAL OBLIGATIONS

CONTENTS

M0301 SCOPE
M0302 GENERAL REQUIREMENTS
M0303 MEASUREMENT AND PAYMENT

M0301 SCOPE

This section covers all work and costs involved in the establishment of the Contractor's organisation, Employer's Agent's office, camps and equipment on site, and the removal thereof after completion of the maintenance contract. It also covers payment for certain general obligations, liabilities and risks and general items of cost not covered elsewhere.

M0302 GENERAL REQUIREMENTS

(a) Camps, constructional equipment and testing facilities

The Contractor shall establish construction camps, offices, stores, workshops and testing facilities on a site or sites approved beforehand by the Employer's Agent or indicated at the site inspection. Accommodation, ablution and other facilities for the site staff shall also be provided as required and the standard of accommodation and the location of all facilities shall comply with the requirements of the authorities concerned.

The Contractor shall also move all necessary equipment and personnel to the site prior to starting work and from the site after completion of the work, leaving the campsites clean and tidy and free from obstructions.

The Contractor shall enter into an agreement of occupation with the landowner or owners and copies of such agreements are to be provided to the Employer's Agent on commencement of the contract. Copies of agreements of satisfactory condition of the sites at hand-over on taking-over of the work shall be provided to the Employer's Agent.

(b) Office for the Employer's Agent

The Contractor will provide the Employer's Agent with office space of 15m² and a carport at the Contractor's campsite or offices. The office shall be constructed from timber, fibre-cement or other approved material. The office shall have double walls filled with insulating material and lined on the inside with timber or other approved material. Ceilings shall be provided for the office building. The office building shall have timber floors or concrete floors with vinyl floor tiles. Window areas of the office shall be at least equal to 25% of the floor area. The office shall be provided with approved burglar proofing.

The office building shall be painted with an approved paint after erection. The paint work shall be maintained during the contract period.

The door shall be equipped with a lock and two keys.

The siting and orientation of the office shall be to the Employer's Agent's satisfaction and shall be decided on in consultation with the Employer's Agent and confirmed in writing before erection. The office shall be provided with 220 volt electricity.

The clear height of all offices between floor and ceiling shall be 2,4m minimum. All windows shall be of the type that can open over the full window area.

The Contractor shall provide and install an air-conditioning unit for the office. The air-conditioning unit shall be of the electrically operated compressor type with closed circuit and not of the evaporation type. The capacity of the air-conditioning unit shall be at least 2,2kW.

The Contractor shall construct a carport for the Employer's Agent to protect the Employer's Agent's vehicle at all times against the direct rays of the sun. The carport shall be at least 20m² in area and the floor shall consist of a layer of broken stone to alleviate dusty and muddy conditions. The carport shall be at least 3m wide and shall have headroom of at least 2m. The roof of the carport shall be waterproof.

The Contractor shall be responsible for the provision and payment of electricity, water and sewerage.

The office and carport shall meet with the approval of the Employer's Agent.

(c) Maintenance during Contract Period

During the Contract Period the Contractor and Subcontractors' camps, staff living quarters and other facilities shall be maintained in a neat and tidy condition.

(d) Legal relations and responsibility to the public

The Contractor shall take the necessary steps to comply with the terms of the General Conditions of Contract for Construction Works, 2015 2nd edition particularly in respect of the insurance's and indemnities required, and the Contractor shall comply with all regulations of statutory authorities. The Contractor shall have adequate insurance to comply with his obligations. Details of such insurance must be provided prior to his signing of the Contract.

(e) Cellular phone

It is a requirement of the contract that the Contractor's site agent and senior site personnel be provided with cellular phones to allow for effective communication between the Contractor's personnel. All costs associated with the provision of the cellular phones will be viewed as being covered by this section.

M0303 MEASUREMENT AND PAYMENT

Item	Unit
M030.01 Fixed obligations	lump sum (LS)

Payment shall be a lump sum to provide for the Contractor's fixed expenses in connection with:

- setting up the Contractor's organization, camps and equipment on the site, and the removal of the same on completion; and
- meeting all other general obligations and liabilities which are not specifically measured for payment under any other items of payment.

The lump sum tendered shall represent full compensation for the fixed part of the Contractor's general obligations, ie that part which is substantially fixed and is not a function of time required for the completion of the contract or of the value of the work.

The tendered lump sum shall not be subject to any variation of the actual value if work done under the contract exceeds or falls short of the tendered amount or as a result of any extension of time for completion in terms of General Conditions of Contract for Construction Works, 2015 3rd edition. The tendered lump sum shall not include any fixed obligation costs for the subcontracts involving ABEs and SMEs.

Before any payment is made under this item, the Contractor shall satisfy the Employer's Agent that the Contractor has provided on site, camps and equipment of good quality and in value exceeding that of the first instalment.

The Contractor may also be required to furnish documented proof that the camps and equipment on site is owned by the Contractor and that the value of such items exceeds the amount claimed under the first payment.

In the event of the Contractor not being able to satisfy the Employer's Agent as to the value of ownership of the camps and equipment, the Employer's Agent shall have the right to withhold part of any payments to be made under this item until the works have been completed.

Payment of the lump sum shall be made in three instalments as follows:

(a) The first instalment, 50% of the lump sum will be paid in the first payment certificate after the Contractor has met all the obligations under this section and has made a substantial start with construction in accordance with the approved programme.

(b) The second instalment, 35% of the lump sum will be paid when the value of the work completed reaches half of the tendered amount, excluding contingencies and price adjustments.

(c) The third and final payment, 15% of the lump sum, will be paid when the works have been completed for the contract and the Contractor has fulfilled all the requirements of this section. If the contract is extended as specified, this payment will only be paid on completion of the extended period.

Item Unit

M030.02 Fixed obligation if contract is extended as specified lump sum (LS)

Payment shall be a lump sum to provide for the Contractor's fixed expenses in connection with:

The Contractor's organization, camps and equipment on site;

Meeting all other general obligations and liabilities which are not specifically measured for payment.

The payment item is only applicable if the contract is extended and will be paid at the beginning of the extension.

Item	Unit
M030.03 Time-related obligations	month

The tendered rate per month represents full compensation for that part of the Contractor's general obligations, i.e. the insurance and indemnities required in terms of the General Conditions of Contract for Construction Works 2015 3rd edition and all other requirements, which are mainly a function of time. The tendered sum will be paid monthly, pro rata for parts of a month, until the end of the period for completion of the works plus any extension thereof.

SECTION BM1400: HOUSING, OFFICES AND LABORATORIES FOR THE CONTRACTOR'S SITE PERSONNEL

BM1402 OFFICES AND LABORATORIES

(a) General

Add the following:

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

SERIES M0000: GENERAL

SECTION M0500: ACCOMMODATION OF TRAFFIC

CONTENTS

M0501 SCOPE

M0502 GENERAL REQUIREMENTS

M0503 MEASUREMENT AND PAYMENT

M0501 SCOPE

This section covers the provision, erection and maintenance of the necessary temporary signs and barricades, and everything necessary for the safe and easy passage of all public traffic during maintenance operations on single and dual carriageway roads.

M0502 GENERAL REQUIREMENTS

Tender

Part C2: Scope of Work

(a) Any cost associated with the accommodation of traffic must be included in payment items

M050.01, M050.02 and M050.03.

The Contractor shall submit to the Employer's Agent a list of temporary road signs with the Contractor's programme for approval. The list will contain the necessary temporary road signs the Contractor will require to achieve the rate of progress set out in the Contractor's programme. The submission of such a list to the Employer's Agent and the approval thereof, shall not release the Contractor of any responsibilities and time restraints under the contract.

(b) Traffic Safety Officer

(i) General Duties

The Contractor shall submit a Curriculum Vitae (CV) of the proposed Traffic Safety Officer to the Employer's Agent for approval whose responsibility shall be the correct placing of all temporary traffic control facilities and road signs, for the maintenance, repair, replacement and removal thereof and report on all incidents, accidents and hazardous spillages.

No additional payment will be made for the Traffic Safety Officer and any costs and profits regarding the Officer and equipment shall be deemed to be included in payment item M050.03.

(ii) Equipment

The Contractor shall provide the Traffic Safety Officer with the necessary resources, *inter alia*, a suitable vehicle being a light delivery van, warning signs and revolving/strobe amber flashing lights with a minimum intensity of 100W. The words TRAFFIC CONTROL, 250mm high, shall be written on a warning sign in letters clearly legible day and night and the sign shall be mounted on the vehicle to be clearly visible.

The vehicle shall be equipped with a cellular phone and be on the Contractor's site radio net. The Traffic Safety Officer, the Officer's vehicle, equipment and personnel shall be available 24 hours per day and on special non-working days/hours as specified and shall not be utilised for other duties except emergency call-outs. The Officer shall liaise directly with the Employer's Agent regarding matters relating to the control of traffic.

(iii) Accidents

The Traffic Safety Officer shall also be responsible for contacting the traffic authorities and South African Police Services in the event of an accident on the section of road under maintenance and provide reasonable assistance in the event of a dangerous or life threatening situation. The Officer will be required to carry first aid equipment at all times in the vehicle.

The officer shall obtain all available information on incidents and accidents at the site and submit these to the Employer's Agent for the Employer's Incident Management System. The Contractor shall participate in the Incident Management System for the route. The Traffic Safety Officer shall monitor and carry out an audit of all activities at a major accident scene. This includes a detailed activity report on the resources, equipment and material used by the various responding parties at the accident scene. This information will be used by the Employer's Agent who will be responsible for verifying all claims received from involved parties prior to being passed onto the Employer.

The Traffic Safety Officer shall record on neat and dimensioned sketches and submit to the Employer's Agent the position and sign reference number where applicable of each sign, barricade, delineator, cone, amber, flicker light, guard-rail and permanent or temporary painted road marking feature. The position of each shall be adequately referenced to identifiable permanent features located along the site of the works.

These records shall also show the date and time at which the recorded traffic accommodation features are certified correct by the Traffic Safety Officer, and shall be signed by the Traffic Safety Officer before being submitted to the Employer's Agent.

The records shall be amended whenever changes are made in the field and the revised detailed sketches shall be submitted to the Employer's Agent. This shall include the recording of the position of flagmen and STOP/GO control men and their associated traffic accommodation equipment wherever they are used.

The Traffic Safety Officer shall personally inspect the position and condition of each traffic accommodation feature every day to record all irregularities discovered and the remedial action taken, and to sign off as correct and submit to the Employer's Agent such record sheets by 17:00 each day. The Traffic Safety Officer shall keep a duplicate book for this specific purpose.

(c) The Contractor shall provide, erect, maintain and remove the necessary traffic-control facilities, road signs, channelization devices, barricades and warning devices (hereinafter referred to as traffic control facilities) as shown on the drawings and in Chapter 13 of Volume 2 of the South African Road Signs Manual. The Contractor shall ensure that the abovementioned traffic control devices are present where required at all times and are functioning properly.

The failure to provide all the signs or refusal by the Contractor to take the necessary precautions for the safety and convenience of public traffic as required by this document, Statutory Authorities or as ordered by the Employer's Agent, shall be sufficient cause for closing down all work until all provisions prescribed have been complied with to the satisfaction of the Employer's Agent.

(d) Traffic control devices no longer required at the site of a deviation or a lane closure shall be moved for re-use. Traffic control devices lost or damaged by the Contractor or public shall be replaced at the Contractor's cost.

(e) The type of construction, spacing and placement of traffic control devices shall be in accordance with Chapter 13 of Volume 2 of the South African Road Signs Traffic Manual or as shown on the drawings.

(f) The Contractor shall arrange the work so that the traffic shall at all times have unimpeded one way access to at least half the width of the road on single carriageway roads, and one or two lanes on dual carriageway roads during the execution of maintenance work. Whenever possible, the Contractor shall ensure that the whole road width or carriageway shall be open at night and all signs no longer applicable to the situation removed or effectively covered. If the road or carriageway is not in a safe trafficable condition over the whole width at the end of each day's work, the Contractor shall supply adequate flagmen, signs, barriers, lights and necessary staff to ensure a reasonable free flow of traffic alternately in each direction on single carriageway roads and on one or two lanes on dual carriageway roads throughout the whole period that the roadway is opened to traffic.

(g) Work on a carriageway shall be restricted to one side of the carriageway only at any particular point and no work may be carried out simultaneously on the slow shoulder and fast lane. Partial closure of a lane will not be permitted. Traffic will not be permitted to deviate around both sides of a working area, which is situated in the middle of a carriageway. Only in exceptional circumstances such as a working area being in close proximity to an on-ramp, will traffic be permitted to travel on both sides of the working area, whereby traffic from the on-ramp shall be separated from through traffic until the vehicles have travelled a safe distance beyond the working area. Such traffic deviations shall be carried out only under the specific authorisation of the Employer's Agent.

Temporary lane closures shall be subject to the approval of the Employer's Agent and may not be permitted on days and time periods when high traffic volumes are anticipated. The Employer's Agent will notify the Contractor in writing, in advance of such restrictions.

Temporary lane closures will only be permitted in daylight hours, unless otherwise directed by the Employer's Agent.

The Contractor's attention is drawn to the restricted hours of work on normal maintenance activities on certain sections of the site, as detailed in the Project Specifications. Work may also be stopped if there is excessive traffic flow or traffic congestion, at the discretion of the Employer's Agent.

(h) The various traffic control facilities, which may be required, are as follows:

(i) Traffic control devices

Traffic control devices involving the use of flagmen, portable STOP and STOP/GO signs, and traffic control signals, whichever may be the most suitable method under prevailing circumstances? Traffic control signals shall be erected only if so specified in the Project Specification or upon an instruction in writing, by the Employer's Agent.

(ii) Road signs and barricades

Road signs shall include all signs in the R, W and G series, which shall also include danger plates and removable barricades.

Road signs shall be made of steel sheets 1,60mm thick, but may also be made from chromadek; all background letters and symbols shall be of engineering-grade retro reflective material.

The basic minimum clearance for the R, W and G Series shall be 800mm from the road surface.

(iii) Channelization devices and barricades.

Channelization devices shall include cones and delineators. Barricades include barrier lattices, movable barricades or other types as shown on the drawings. All delineators shall be manufactured from plastic. The use of steel drums as channelization devices will not be permitted. Temporary warning signs, delineators and barricades shall be of the black, yellow and red type, in accordance with the figures and plans included in the

Contract documents, but regulatory signs shall be in accordance with Chapter 13 of Volume 2 of the South African Road Traffic Signs Manual.

(iv) Flagmen

The Contractor shall provide well-trained and at least two equipped flagmen for each work area during the daytime as specified per drawing. Each flagman must have a red flag with the minimum size of 600mm x 600mm and a highly visible vest over his overall.

A flagman must be positioned to give sufficient warning in advance when loading, unloading or access of plant and equipment disrupts the flow of traffic.

No separate payment will be made for flagmen and any costs associated with it, including the provision thereof, must be included in item M050.03.

(i) All vehicles and items of mobile equipment operating on site shall be supplied with electrically operated amber rotating/strobe warning lights of robust construction. The amber lens shall have a height of at least 150mm and an output of at least 100W. The beacons shall be so placed as to be clearly visible from all directions from a distance of three hundred (300) metres.

In addition, all powered vehicles used on the contract shall be fitted with warning sign boards mounted across the back and front of the vehicle. These boards shall be the same width as the vehicle, 400mm high and display the word "MAINTENANCE" in bold black letters on a yellow background and be subject to the approval of the Employer's Agent.

(j) The Contractor shall provide at the Contractor's expense, reflective waistcoats and orange/yellow overalls or others, which have been approved by the Employer's Agent for each worker on site.

(k) The following standards shall be applied when selecting and positioning road signs.

(i) Only standard signs shall be used.

(ii) The signs shall be clean and in good condition.

(iii) The start of lane closures shall be positioned such that a minimum sight distance of 300m, measured at a height of 1,05m from the road surface, is obtained.

(iv) Sign stands shall be ballasted by sand bags filled with sand or soil that has a gradation such that 100% of the material passes the 6,7mm sieve and be of sufficient number and mass to prevent the signs being blown over by wind or air disturbance caused by passing vehicles. The sign stands and foot pieces shall be sufficiently robust and be large enough to enable the signs to be sufficiently ballasted.

(v) The signs shall be displayed according to the standard specified.

(vi) The sign layout must give the travelling public time to understand and respond to the information, which the signs convey.

(vii) Always place signs furthest away from the work area and then work inwards in the direction of traffic.

(viii) On completion of the work remove cones/signs by starting at the work area and work outwards against the flow of traffic.

(l) The Contractor shall indemnify the Employer against all proceedings, claims, actions, damages and costs which may arise from or be related to the absence or improper functioning or replacement of traffic control facilities.

(m) The type of construction, spacing and placement of all traffic control devices shall also be coordinated with the relevant traffic authority.

(n) The following limitations to construction lengths and occupations of the road sections shall apply:

(i) The maximum length of the work area within a half-width or shoulder closure shall be 2km.

(ii) The minimum gap between closures shall be 3km.

(iii) Closures shall not be allowed opposite each other.

(iv) On non-working days and between sunset and sunrise all

(o) Penalties

M0503 MEASUREMENT AND PAYMENT

temporary road signs and traffic control facilities shall be removed from the carriageway with all traffic lanes fully open to traffic. Penalties shall be applied when the accommodation of traffic is not done according to the specified standards, and if maintenance of temporary road signs is not done timeously. Where the accommodation of traffic per work area is non-compliant the penalty as specified in the Project Specification is applicable. The Contractor will not be allowed to continue with any work until the accommodation of traffic complies with the specifications.

Verbal instructions in this regard shall be binding, and such instructions must, with complete detail on times, number of signs, positions and delays, be confirmed in writing in the official site diary. Penalties shall be recorded in the minutes of the site meetings.

Item	Unit
M050.01 Provision of temporary traffic control facilities	lump sum (LS)

The tendered lump sum shall be in full compensation for the provision of all the temporary road signs needed to do the maintenance work and shall also include for the provision of sufficient surplus barricades, signs, delineators and cones on the site for replacement of damaged or missing items. Payment of the lump sum will be made in three instalments as follows:

(i) The first instalment, 60% of the lump sum will be paid after the Contractor meets all the obligations regarding the provision of the temporary road signs.

This payment will be subject to the approval of the list of temporary signs submitted by the Contractor with the Contractor's programme.

(ii) The second instalment, 25% of the lump sum, will be paid when 35% of

the contract period has expired. This payment will be subject to the approval of the existing and replaced signs.

(iii) The third and final payment, 15% of the lump sum, will be paid when 70% of the contract period has expired. This payment will be subject to the approval of the existing and replaced signs.

Item	Unit
M050.02 Provision of temporary traffic control facilities if contract is extended as specified	lump sum (LS)

The tendered lump sum shall be in full compensation of the provision of all the necessary temporary road signs needed to continue the maintenance work for the extension of contract. Payment of the lump sum will only be made if the contract is extended and at the beginning of the extension.

Item	Unit
M050.03 Accommodation of traffic and maintaining temporary deviations	month

The tendered rate shall include full compensation for all costs associated with the accommodation of traffic and maintaining temporary deviations and shall include work constructed and paid under Section M9100. The tendered rate shall also include full compensation for the provision of a fulltime

Traffic Safety Officer and for all the duties performed by the Traffic Safety Officer. The tendered rate shall also include full compensation for the provision of communication equipment required for regulating the traffic, arranging for the moving of services, solving traffic problems, complying with the legal requirements of all authorities concerned, for providing temporary access to private property, and for the provision and maintenance of temporary drainage. The tendered rate shall also include any cost associated with the provision of flagmen.

SERIES M0000: GENERAL

SECTION M0600: OVERHAUL

CONTENTS

M0601 SCOPE
M0602 DEFINITIONS
M0603 MEASUREMENT AND PAYMENT

M0601 SCOPE

This section covers the hauling of overhaul material as defined herein from the place of excavation or stockpile to the position of placement where such haul is in excess of the free-haul distance as defined herein.

Payment for hauling of overhaul material in excess of the free-haul distance will only be applicable for the following sections, M1100, M1700, M2100, M2200, M2600, M2800 and M3300. For the other sections any costs associated with hauling in excess of the free-haul distance must be included in the rates.

M0602 DEFINITIONS

(a) Overhaul material

Overhaul materials shall be transported material to which overhaul shall apply when hauled in excess of the free-haul distance specified.

For the transporting of certain material to the position of placement a free-haul distance shall not apply.

Only the material specified in the various sections to be transported shall be paid for.

(b) Haul distance

The haul distance for cut or borrow to fill or spoil shall be the distance between the centre of volume of the overhaul material in the cut or the centre of volume where the material is spoiled before excavation and the centre of the volume of the fill constructed with the overhaul material. In certain cases where volumes of material are measured in hauling vehicles as specified the haul distance shall be the distance from the point where the vehicle is fully loaded to its rated capacity to the place where it is finally deposited.

The haul distance shall be measured along the shortest route determined by the Employer's Agent as being feasible and practicable. Should the Contractor choose to haul material over some other longer route, compensation shall nevertheless be based on the haul distance measured along the shortest route designated by the Employer's Agent.

The haul distance shall be measured to the nearest 0,1km.

(c) Free-haul distance

The free-haul distance shall be the distance up to which overhaul material may be hauled before overhaul becomes payable. Unless otherwise specified this distance shall be 1,0km.

(d) Overhaul distance

The overhaul distance shall be the haul distance as defined above, less 1,0km measured to the nearest 0,1km.

M0603 MEASUREMENT AND PAYMENT

The quantity of material hauled shall in all cases be measured in the same manner as the item to which the haul applies.

Payment for the hauling of material shall be made in each section under the relevant items where the hauling operation is specified.

SERIES M1000: PAVEMENT MAINTENANCE

SECTION M1100: PAVEMENT LAYERS REPAIR

CONTENTS

- M1101 SCOPE
- M1102 EXECUTION OF WORK
- M1103 ACCEPTANCE CRITERIA
- M1104 EQUIPMENT
- M1105 MATERIALS
- M1106 MEASUREMENT AND PAYMENT

M1101 SCOPE

This section covers the work in connection with the repair of localised pavement failures other than potholes, edge breaks and surface failures in Section M1200.

Nominated Subcontractors with relevant experience shall undertake the repair work.

It involves the excavation of the deformed areas and reconstructing the pavement and surfacing layers, including treatment of the floor of the excavation prior to backfilling.

Pavement failures consist of a combination of rutting, cracking and displacement of the road surface and base layer or the surfacing layer only usually accompanied by disintegration of the surfacing.

M1102 EXECUTION OF WORK

(a) Removal of distressed areas

The Employer's Agent will demarcate any failed areas to be repaired, and shall instruct the Contractor with regard to the repair work to be done. The Contractor shall provide assistance and temporary traffic control facilities for marking out failed sections of the road.

Unless otherwise instructed by the Employer's Agent, the repaired area shall have a neat rectangular shape, at right angles to the direction of traffic. The existing material shall be excavated and removed to the specified depth.

Excavation for pavement failures shall be cut or trimmed with side slopes perpendicular to the horizontal; for each excavated layer, a step shall be created with the horizontal distance equal to the vertical distance to a maximum of 150mm.

Where required, excavation shall be done with approved milling equipment. The equipment shall be so equipped that it will be able to mill out asphalt and/or cemented material to the prescribed depth in one operation over the width specified in the Project Specifications. The milling depth shall be controlled electronically.

The direction and speed of the milling machine and the speed of rotation of the milling drum shall be adjustable so as to obtain the required grading of the milled material. The machine shall be capable of making a neat vertical cut at the outer edges when milling the layer and to leave the floor of the cut level and with a uniform texture.

The milling machine shall be equipped with a self-loading conveyor belt, which can be easily removed and installed and adjusted for slope and direction.

Where all or a part of the existing surfacing material is to be reprocessed together with the underlying layer, the surfacing shall be properly broken down and mixed up to the full depth of the existing base material to the satisfaction of the Employer's Agent. Fragments of bituminous material shall be broken down to sizes not exceeding 37,5mm.

Where specified in the Project Specifications or ordered by the Employer's Agent, the existing bituminous material shall first be removed before the underlying layers are broken up.

Bituminous material may be milled out or otherwise broken up and removed to approved stockpile sites for recycling or to spoil sites, whichever is required. Where the underlying material is to be reprocessed as base, the exposed surface shall be cleaned to the satisfaction of the Employer's Agent after removal of the bituminous material. All remaining fragments of bituminous material shall be removed, and not more than 5% of the surface may be covered with bituminous material.

The existing pavement material shall be broken down to the specified depth and removed, or reprocessed *insitu*, whichever may be required. The underlying layers may not be damaged, and material from one layer may not be mixed with that of another layer. Where such mixing occurs or where the material is contaminated in any other way by the actions of the Contractor, he shall remove such material and replace it with other approved material, all at his own cost.

Where so ordered by the Employer's Agent, asphalt and cemented layers shall be cut or sawn through to the specified depth along the measured limit with approved equipment. No additional payment will be made for sawing.

The equipment to be used for the conventional breaking-up and excavation of existing pavement layers will be determined by the size and depth of the pavement section to be processed or excavated, taking into consideration the fact that work may have to be carried out in small areas.

Excavated material from each pavement layer shall be placed in separate stockpiles adjacent to the repaired area. The stockpiled material shall be re-used or spoiled at an approved site in accordance with the Employer's Agent's instructions.

After completion of the excavation to the specified depth, the Employer's Agent shall be afforded the opportunity to examine it. Where required, the floor of the excavation shall be compacted to the specified density for the layer concerned. Excavated material shall be disposed of at approved sites unless re-use of material is ordered by the Employer's Agent. At no time shall excess material be dumped in side drains or side banks.

(b) Backfilling of excavation for pavement failures

Prior to backfilling, the base and sides of the excavation shall be cleaned of all loose material. The excavation shall be backfilled with approved gravel, crushed stone or asphalt and compacted to a density as specified below:

Base	(0 – 150mm below final base level) 98%
Subbase	(150mm – 300mm below final base level) 95%
Selected	(300mm – 600mm below final base level) 93%
Fill	(Below 600mm of final base level) 90%

Backfilling of the excavation shall be done as follows:

(i) The Employer's Agent may instruct the Contractor to use stabilised material excavated from the existing pavement, as backfilling, either for subbase layers only or for both subbase and base layers. Material shall be broken down and 60kg/m of CEM I cement (OPC) shall be added. Water shall be uniformly mixed into the material. The material shall then be returned to the road and compacted as specified above.

(ii) Where required by the Employer's Agent, backfilling for the base layer shall be done with imported crushed stone material of G3 or better quality, treated with bitumen emulsion. CEM I cement (OPC) or CEM III A cement (PBFC) shall be added at a rate of 1% (mass/mass) and mixed off the road by means of a concrete mixer or hand labour if approved by the Employer's Agent. All mixing shall result in a homogenous mixture of additives and parent material, which is to the satisfaction of the Employer's Agent.

Thereafter, the material shall be treated with a stable-grade bitumen emulsion at a rate of 3% (mass/mass). Before the emulsion is added to the stone, it shall be diluted with water so that the moisture content of the mix will be the optimum moisture content for compaction.

The mixed material shall then be transported to the excavated area, placed and compacted, all within 5 hours of the commencement of the mixing process. Thereafter, 0.6litres/m of the diluted 60% bitumen emulsion shall be applied to the base or layer to ensure a sealed surface.

The density of the backfilling of the base layer shall be at least 98% of modified AASHTO density.

(iii) Where required by the Employer's Agent the backfilling of the base layer shall be done with continuously graded asphalt.

The rates of application and mix proportions of bituminous binder, aggregates and fillers which are given in Table M1105/2 are nominal rates and proportions and shall only be used for tendering purposes. The rates and proportions actually used shall be determined to suit the materials used and conditions prevailing during construction and any approved variation on a nominal mix in the bitumen content or active filler content shall be the subject of an adjustment in payment for binder or active filler variations.

Before production or delivery of the asphalt the Contractor shall submit samples of the materials the Contractor proposes to use in the mix, together with the Contractor's proposed mix design as determined by an approved laboratory so that the Employer's Agent may test the materials and confirm the use of the proposed mix and satisfy himself that it meets the specified requirements. The Employer's Agent also reserves the right to change aggregate blends in order to allow the selection of any combined aggregate grading within the specified grading envelope(s) for the proposed mix.

As soon as the materials become available the Contractor shall produce a working mix in the plant in accordance with the design mix. The working mix shall again be tested by the Contractor for compliance with the design requirements. Samples of the working mix and the test results shall also be made available to the Employer's Agent, who will authorise the use of the working mix proportions approved for use. The composition of the approved working mix shall be maintained.

The nominal mix proportions (by mass) of the various asphalt mixes are set out in Table M1105/2.

The design of the asphalt mixes shall be in accordance with the design guidelines of TRH8 and appropriate research results and the mix properties and requirements shall be specified in the Project Specifications. In addition to the design guidelines of TRH8, the asphalt mixes shall also comply with the requirements in Table M1105/1 unless otherwise stated in the Project Specifications. Compaction : The excavated areas shall be tacked at a spray rate of 0,40 liter per m² using 60% cationic emulsion.

The mix shall be rolled as soon as possible after it has been laid by a vibratory roller. Such rolling shall commence and be continued only for as long as it is effective and does not have any detrimental effect. Only steel wheel rollers (non-vibratory) will be permitted for the compaction.

As many rollers shall be used as is necessary to provide the specified pavement density and the required surface texture. During rolling of asphalt surfacing, the roller wheels shall be kept moist with only sufficient water to avoid picking up the material.

After longitudinal joints and edges have been compacted, rolling shall start longitudinally at the sides and gradually progress towards the centre of the pavement, except on super elevated curves, or where the areas to be paved has a cross-fall, when rolling shall begin on the low side and progress to the higher side, uniformly lapping each preceding track, covering the entire surface. During breakdown rolling the rollers shall move at a slow but uniform speed (not to exceed 5km/h) with the drive roller nearest the paver, unless otherwise specified on account of steep gradients.

The Contractor shall take adequate precautions to eliminate pick-up. The sequence of rollers used in compaction is at the discretion of the Contractor provided the completed pavement shall have a density as measured on recovered core equal to or greater than 97%, minus the percentage voids in the approved production mix, of the theoretical maximum density, determined as described in TMH1 method C4.

The Contractor shall utilise a calibrated nuclear gauge for process control during compaction operations. Notwithstanding this requirement, the acceptance control carried out for compaction by the Employer's Agent shall still be based on cores taken from the compacted layer.

(a) Cracks or hair line cracks shall not be formed and the bond with the underlying layer shall not be broken.

(b) The density shall be uniform over the whole area of the layer and extend over the full depth of the layer.

(c) In restricted areas where the specified rollers cannot be used, compaction shall be carried out with hand-operated mechanical compaction equipment or approved smaller vibratory rollers. The prescribed density requirements remain applicable throughout over the full layer thickness irrespective of the method of compaction.

(iv) The Contractor shall seal the joints between the new and old asphalt of the patch as specified in Section M1300 Payment for Sealing of the Joints will be under Section M1300.

(v) All the backfilling shall be completed in geometric patterns of squares or rectangles and in each case the base layer shall be finished off neatly to 40mm \pm 10mm below the levels of the surrounding sound road surface.

(c) Production limitations

As far as it is practically possible the size of the area to be repaired shall be limited to that which can be excavated, backfilled and opened to traffic within a single working day. Where this is impractical the Contractor shall consult with the Employer's Agent regarding the signs requirement for controlling the traffic during night time. No area that is to be prepared shall be left exposed if rain is imminent.

The asphalt base material shall be placed in layers not exceeding 75mm and crushed stone material be placed in layers not exceeding 150mm measured in the loose. The surfacing material shall be placed in one layer at a thickness of 40mm \pm 10mm level to or up to 5mm above the existing road surface level.

(d) Testing

Modified AASHTO densities shall be determined using TMHI Method A16T (preparation of stabilised material) and Method A7 (preparation of unstabilised material and compaction of materials).

M1103 ACCEPTANCE CRITERIA

The repaired area shall be rectangular in shape.

The edges of the completed surfacing shall not be above the existing surface by more than 3mm. The edges or any part of the patch area shall not be below the surrounding road surface.

The thickness of the asphalt surfacing at any point shall be 40mm \pm 10mm.

The crossfall of the completed area shall be equal to that of the adjacent surface to within a tolerance of \pm 0,5% crossfall.

When tested with a 3m straight edge laid parallel to or at right angles to the road centreline the surface of the area shall not deviate from the bottom of the straight edge by more than 5mm.

The reconstruction of the pavement layers shall require a standard of workmanship to produce a repaired area that will not deteriorate as specified in the Project Specifications.

M1104 EQUIPMENT

All equipment shall be suitable for the specified use and size of working areas and shall be capable of obtaining the specified results.

Only approved cutting or sawing equipment may be used for cutting or sawing asphalt layers. The equipment shall be capable of cutting asphalt layers to depths of 200mm in one operation without fragmenting the material, and in straight lines within the required tolerances.

The following items of plant and equipment shall also be available and in good working order:

A vibratory roller having a mass approximately equal to that of a Bomag 90 or similar vibratory roller, with an adjustable amplitude and frequency of vibration.

A mobile compressor capable of producing at least 3 m/minute compressed air at 750kPa.

Appropriate paving breakers.

Approved milling machine if required.

Manually operated pneumatic compactors as required.

Appropriate concrete mixers.

M1105 MATERIALS

(a) Crushed Stone

(b) Stabilising Agent Shall not be less than 35% and shall not exceed 50% in respect of the target grading 98% or 100% of modified AASHTO density (as specified)

The stabilising agent shall be CEM I cement (OPC) or hydrated lime and shall comply with the requirements of category ENV 197-1 or SABS 824 respectively.

(c) Hot mix Asphalt Base and surfacing mix requirements

The mix shall be a continuously graded asphalt and shall have the following properties:

A 60/70 penetration grade bitumen shall be used and the binder type shall comply with the requirements of SABS 307 (1972) amended May 1997.

Grading limits and mix proportions are given in table M1105/2.

M1106 MEASUREMENT AND PAYMENT

M1100 PAVEMENT LAYER REPAIR

Item	Unit
M110.01 Removal and excavating material from existing pavements (except milled material)	
(a) Areas up to 50m ²	cubic metre (m ³)
(b) Areas larger than 50m ² but smaller than 100m ²	cubic metre (m ³)
(c) Areas larger than 100m ²	cubic metre (m ³)

The unit of measurement shall be the cubic metre of material excavated from the existing pavement irrespective of the type of material. The quantity shall be computed in accordance with the authorised dimensions of the excavation.

The tendered rate shall include full compensation for demarcating the excavation and excavating and disposing and/or stockpiling of the material, including haul over a free-haul distance of 1,0km.

Payment will not distinguish between the different types of pavement layer and surfacing material excavated.

Item	Unit
M110.02 Milling out material from existing pavements	cubic metre (m ³)

The unit of measurement shall be the cubic metre of material milled out from the existing pavement irrespective of the type of material. The quantity shall be computed in accordance with the authorised dimensions of the excavation.

The tendered rate shall include full compensation for demarcating the excavation and excavating and disposing and/or stockpiling of the material, including haul over a free-haul distance of 1,0km.

Payment will not distinguish between the different types of pavement material milled or the size of the repaired area.

Item	Unit
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M110.03 Backfilling of base layer for surface failures with:
(98% of modified AASHTO density.)

The unit of measurement shall be the cubic metre of chemically stabilised gravel or emulsion- ton (t) treated crushed stone or the ton of asphalt placed in accordance with the specified requirements. The quantity will be computed in accordance with the authorised dimensions of the layer in the case of gravel or crushed stone and in accordance with the certified weighbridge tickets issued in the case of asphalt. Payment will not be made for wasted material. Distinction shall be made for the size of repaired area. The tendered rate shall include full compensation for providing all the material, irrespective of its origin, for all mixing, placing, trimming or cutting the edges of existing surfacing, compacting, including the floor, and finishing as specified for all transport, work in restricted areas, and also for all machinery, equipment, labour, tack coat, supervision and other incidentals for executing the work as specified.

The tendered rate for chemically stabilised gravel shall also include full compensation for stabilising and providing the stabilising agent.

The tendered rate for emulsion-treated crushed stone shall also include full compensation for supplying and mixing with emulsion, stabilising and providing the stabilising agent.

Payment for hot mixed asphalt base and surfacing will not distinguish between the various types of asphalt and will allow for priming.

Item	Unit
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M110.04 Backfilling of pavement layers to compaction as specified.

- | | |
|---|-------------------------------|
| (a) Subbase layer (95% of modified AASHTO density) | |
| (i) Areas up to 50m ² | cubic meter (m ³) |
| (ii) Areas larger than 50m ² but smaller than 100m | cubic meter (m ³) |
| (iii) Areas larger than 100m | cubic meter (m ³) |
| (b) Selected layer (93% of modified AASHTO density) | |
| (i) Areas up to 50m ² | cubic meter (m ³) |
| (ii) Areas larger than 50m ² but smaller than 100m | cubic meter (m ³) |
| (iii) Areas larger than 100m ² | cubic meter (m ³) |
| (c) Fill layer (90% of modified AASHTO density) | |
| (i) Areas up to 50m ² | cubic meter (m ³) |
| (ii) Areas larger than 50m ² but smaller than 100m | cubic meter (m ³) |
| (iii) Areas larger than 100m | cubic meter (m ³) |

The unit of measurement shall be cubic meters of material to be backfilled.

The tendered rate shall include full compensation for materials, labour, tools and equipment necessary for backfilling material as specified. Distinction shall be made for the size of the repaired area.

Item	Unit
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M110.05 Binder variations

- | | |
|-------------------------------|---------|
| (a) Penetration-grade bitumen | ton (t) |
|-------------------------------|---------|

The unit of measurement in respect of increases or decreases in the bituminous binder from that specified in the nominal mix shall be the ton.

Item	Unit
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M110.06 Variation in active filler content

(a) Cement	ton (t)
(b) Lime	ton (t)

The unit of measurement in respect of increases or decreases in the active filler content for base and surfacing mixtures from that specified in the nominal mix shall be the ton. No payment shall be made for "inert" filler added by the Contractor.

Item Unit

M110.07 Overhaul for material hauled in excess of 1,0km free-haul

(a) Spoil material	m ³ -km
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The unit of measurement shall be the cubic meter of material hauled in excess of 1,0km, the volume of material measured loose in truck of excavated material transported to spoil, all multiplied by the overhaul distance.

The tendered rate shall include full compensation for hauling the material in excess of the free haul distance.

SERIES M1000: PAVEMENT MAINTENANCE

SECTION M1200: REPAIR OF POTHoles, EDGE BREAKS AND SURFACE FAILURES

CONTENTS

- M1201 SCOPE
- M1202 EXECUTION OF WORK
- M1203 ACCEPTANCE CRITERIA
- M1204 EQUIPMENT
- M1205 MATERIAL
- M1206 MEASUREMENT AND PAYMENT

M1201 SCOPE

This section covers the repair of potholes, edge breaks and surface failures on an ad hoc basis. A pothole is defined as a surface failure, which has extended into the base layer forming a hole with an area smaller than 0,5m². Potholes are isolated and are not associated with displacement. Potholes with areas larger than 0,5m² must be treated as pavement failures.

Edge break is defined as the failure of the edge of the surfacing up to a maximum width of 300mm from the continued edge of the surfacing usually accompanied by a loss of gravel on the shoulder. Edge breaks wider than 300mm will be treated as pavement failures.

Surfacing failures often preceded by map or diamond-like cracking is the breaking up of only the surfacing layer (seal or asphalt) exposing but not affecting the underlying layer. The resulting depression is usually of uniform thickness. Surfacing failures with areas larger than 2m² must be treated as pavement failures.

Distinction shall be made in terms of temporary and permanent repairs of potholes, edge breaks and surface failures. Temporary repairs shall only be undertaken if instructed or authorised by the Employer's Agent.

M1202 EXECUTION OF WORK

Potholes, edge breaks and surface failures shall consist of trimming away ravelled edges and loose material to the full depth and the backfilling thereof as specified.

(a) Excavation

Potholes: The existing material shall be removed in a neat rectangle to sound base, with a minimum dimension of 200mm x 200mm. All sides shall be perpendicular or parallel to the direction of traffic.

Edge breaks: Loose and cracked edges shall be trimmed back to a neat rectangular shape, parallel and perpendicular to the centre line of the road to sound surrounding surfacing or base layer. All edges shall be saw cut to a minimum depth of 30mm below the road surface and the maximum thickness of each layer shall be 50mm.

Temporary partial-depth concrete pothole repairing: All loose or fractured concrete within the spalled area shall be removed by means of light hand held pneumatic tools down to solid concrete. The cavity shall be thoroughly cleaned using brushes or compressed air.

Surfacing failures: The surface repair shall have a neat rectangular shape, at right angles to the direction of traffic. Before starting any repair work the areas adjacent to the holes should be checked for debonding by tapping the surface with a hammer. A dull sound indicates lack of bond. Debonded material must be removed and can be lifted off with a flat spade.

(b) Backfilling

After completion of the excavation, the Employer's Agent shall be afforded the opportunity to inspect it. The floor of the excavation shall be cleaned of all undulations to ensure a firm flat base and sides and shall be tacked with 60% cationic stablegrade bitumen emulsion at a rate of 0,6 litre per m². Continuously graded medium asphalt shall be placed and compacted to the level of the existing adjacent surfacing.

The asphalt shall be placed and compacted in layers not exceeding 40mm in thickness after compaction. The asphalt shall be compacted as specified in section M1100: Pavement Layer Repairs

Temporary partial-depth concrete pothole repairing shall be backfilled with continuously graded asphalt surfacing as specified in section M1100: Pavement Layer Repairs. The asphalt shall be backfilled using hand compacting equipment.

The Contractor will ensure that the asphalt is protected against "pick up" by the compactors. All coarse aggregate will be removed from the shallow areas in the excavation to provide a smooth riding surface, flush with the surrounding concrete surface. Before backfilling can be done, the bottom and sides of the excavation, shall first be painted with 60% anionic spray grade emulsion at a rate of 0,5 litre per m². The Contractor shall arrange the work so as to allow enough time for the emulsion to break before asphalt can be placed. No excavation may be left open during the night. No joints need to be constructed between the asphalt and the concrete.

Surfacing failures should be well cleaned (if contaminated with fumes by washing) and a tack coat of 60% cationic emulsion applied at a rate of 0,40 litre per m² (road penetration and distribution of the tack coat must be achieved). This can be done by scrubbing the floor and sides with a bristle broom. The hole must be backfilled with either coarse slurry or fine asphalt.

The composition and compaction requirement for the slurry and fine asphalt shall be as specified in section M1100: Pavement Layer Repair and section M1600: Surface Treatment of Surfaced Roads.

(c) Temporary repair of potholes and edge breaks

A cold premixed bituminous mixture can be used for temporary pothole or edge break repair. Within a period of two months after placement of the coldmix, the coldmix must be replaced by hot asphalt mix as specified.

The mixture shall either be obtained from approved commercial sources or prepared and mixed in a suitable concrete or other approved type of mixer in the following proportions:

- (i) 9,5mm nominal sized aggregate: 1 part
- (ii) 6,7mm nominal sized aggregate: 1 part
- (iii) Crusher sand (fine grade): 1 part
- (iv) 60% Stable mix-grade emulsion Between 125 and 150 litre per m³
(Prepared from 80/100 penetration aggregate mix bitumen grade bitumen)
- (v) 1% cement to promote breaking

M1203 ACCEPTANCE CRITERIA

(a) Quality

Before spreading the mixture, the surface shall be prepared by painting it with one layer of bituminous emulsion at a rate of 0.6 litre per m

, which shall be allowed to dry. The mixture shall then be placed on the areas to be sealed and screeded off in a layer of uniform thickness. After the emulsion has broken and the layer has attained sufficient stability, it shall be

compacted with a steel-wheeled roller or whacker. The thickness of the layer shall be the same as that of the adjacent seal. The repaired area shall be rectangular in shape.

The edges of the completed surfacing shall not be above the existing surface by more than 3mm. The edges or any part of the repaired area shall not be below the surrounding road surface. The thickness of the asphalt surfacing at any point shall be 40mm ± 10mm.

The crossfall of the completed area shall be equal to that of the adjacent surface to within a tolerance of ± 0.5% crossfall.

When tested with a 3m straight edge laid parallel to or at right angles to the road centreline the surface of the area shall not deviate from the bottom of the straight edge by more than 5mm.

(b) Acceptance criteria

Potholes: Potholes must be repaired within two days after instruction from the Employer's Agent or detection by route services.

Edge breaks: Edge breaks must be repaired within 14 days after instruction from the Employer's Agent or detection by route services.

Surface failures: Surface failures must be repaired within two days after instruction from the Employer's Agent or detection by route services.

(c) Response time to correct deficiency

Potholes and surface failures have to be repaired within the time specified.

(d) Reduced payments

M1204 EQUIPMENT

Failure by the Contractor to comply with the minimum standard and response time for pothole, edge breaks and surface failure repairs will result in penalties as specified in the Project Specifications. All equipment shall be suitable for the specified use and extent of working areas and shall be capable of obtaining the specified results.

Only approved cutting or sawing equipment may be used for cutting or sawing asphalt layers. The equipment shall be capable of cutting asphalt layers to depths of 200mm in one operation without fragmenting the material, and in straight lines within the required tolerances.

The following items of plant and equipment shall also be available and in good working order:

A vibratory roller having a mass approximately equal to that of a Bomag 90 or similar vibratory roller, with an adjustable amplitude and frequency of vibration.

A mobile compressor capable of producing at least 3m³/minute compressed air at 750kPa.

Appropriate paving breakers.

Manually operated pneumatic compactors as required. Appropriate concrete mixers.

M1205 MATERIAL

The material used for potholes, edge breaks and surface failures shall be as specified in section M1100: Pavement Layer Repairs and section M1600: Surface Treatment of Surfaced Roads.

M1206 MEASUREMENT AND PAYMENT

M1200 REPAIR OF POTHoles

Item	Unit
M120.01 Pothole repair (< 0,5m ²) using hot mix continuously graded asphalt number	(No)

The unit of measurement for repairing shall be the number of potholes repaired, irrespective of the thickness or number of layers.

The tendered rate shall include full compensation for procuring, trimming the edges of the existing surface, furnishing, and storing of all materials, providing and transporting all labour and equipment necessary for cutting back the edges, excavation, removing excavated and loose material and disposal thereof, priming, backfilling with the approved product, compaction and trimming as specified.

M1210 REPAIR OF EDGE BREAKS

Item	Unit
M121.01 Repairing edge breaks using hot mix continuously graded asphalt meter	(m)

The unit of measurement for repairing edge breaks shall be the meter of edge breaks repaired, irrespective of the thickness or number of layers.

The tendered rate shall include full compensation for compacting the surface on which the new edge is to be constructed, trimming the edges of the existing surface, procuring, furnishing, and mixing all materials and compacting and trimming the asphalt to the required lines and levels. It shall also include full compensation for applying a tack coat of emulsion to the surface to be treated. The tendered rate shall include full compensation for all transport, handling, labour, material and all incidentals necessary to complete all the work as specified.

M1220 REPAIR OF SURFACE FAILURES

Item	Unit
M122.01 Surface failure repair using hot mix continuously graded asphalt number	(No)

The unit of measurement shall be the number of surface failures repaired, irrespective of the thickness.

The tendered rates shall include full compensation for procuring, trimming the edges of the existing surface, furnishing, and storing of all materials, providing and transporting all labour and equipment necessary for cutting back the edges, excavation, removing excavated and loose material and disposal thereof, priming, backfilling with the approved product, compaction and trimming as specified.

M1230 TEMPORARY REPAIR

Item	Unit
M123.01 Temporary repair of potholes, edge breaks and surface failures using cold mix asphalt surfacing from the following sources:	
(a) Commercial sources (indicate type) number	(No)
(b) Mixed on site as specified number	(No)

The unit of measurement shall be the number of potholes, edge breaks and surface failures repaired, irrespective of the thickness or number of layers.

The tendered rates shall include full compensation for procuring, furnishing, and storing of all materials, providing and transporting all plant, labour and equipment necessary for cutting back the edges, excavation, removing excavated and loose material and disposal thereof, priming, backfilling with the approved product, compaction and trimming as specified in this section.

Item	Unit
M123.02 Temporary partial-depth pothole repair of concrete with asphalt surfacing	

(a) Removal of damaged concrete and replacement of number (No) damaged concrete with asphalt surfacing (indicate type)

The unit of measurement for the replacement of damaged concrete with asphalt surfacing shall be the number of potholes repaired.

The tendered rate shall include for all the necessary labour, plant, equipment, tools and materials, lighting, removal of damaged concrete and any additional requirements for night work, for preparation of the surface to be primed, supplying and applying the bituminous tack coat, supplying, mixing, transporting, placing, compacting, striking off, finishing, waste and disposal thereof.

SERIES M1000: PAVEMENT MAINTENANCE

SECTION M1300: CRACK SEALING

CONTENTS

- M1301 SCOPE
- M1302 DESCRIPTION OF CRACKS AND REPAIR METHODS
- M1303 EXECUTION OF WORK
- M1304 MATERIAL
- M1305 EQUIPMENT
- M1306 ACCEPTANCE CRITERIA
- M1307 MEASUREMENT AND PAYMENT

M1301 SCOPE

This section deals with all work in connection with the sealing of cracks in the road surface. No cracks shall be sealed unless so ordered by the Employer's Agent.

Cracks shall be classified as either active or passive cracks. The active cracks generally originate from levels below the surfacing while the passive cracks apply to the surfacing.

Active cracks

- Stabilisation cracks (primary cracks in a block pattern developing with time into secondary cracking with pumping of fines)
- Volcano cracks (often stabilisation cracks in low traffic areas like the shoulder)
- Expansive soil cracks (often parallel to road edge)
- Longitudinal cracks (settlement/slip)

Passive cracks

- Surfacing cracks (old and brittle surface or over-stressing of the surfacing layer).
- Single cracks (long, transverse and random).
- Crocodile cracking (over-stressing of base/subbase) – usually with rutting and limited to the wheel tracks.

M1302 DESCRIPTION OF CRACKS AND REPAIR METHODS

Active cracks

(a) Stabilisation cracks

(i) Description

Stabilisation ("Block") cracking is active cracking with a very distinctive block form which with time deteriorates to secondary cracking at closer spacings and eventually if untreated forms large open closely spaced cracks. These cracks are associated with cemented pavement layers.

(ii) Repair method

Blow out all loose material and grit from the cracks. Prime cracks with an inverted emulsion primer as specified. Fill the cracks with a stable grade anionic emulsion modified with an anionic latex (8% nett rubber on nett bitumen), or a cationic spray grade emulsion modified with a neutralised latex. Materials are to be injected with the equipment under pressure as specified. The Contractor must take care not to apply prime or emulsion on the surface outside the cracks and all excess material shall be removed.

Where the block cracking degenerates to secondary cracking initially these are hairline cracks with pumping of fines. These cracks shall be treated with a geotextile bandage to reduce or stop the pumping of fines. Where the secondary cracks are open they shall be treated as open block cracks as specified above.

Where isolated areas of small blocks are rocking under traffic these should be removed and repaired under section M1100: Pavement Layer Repairs.

(b) Volcano cracks

(i) Description

Volcano cracks are active cracks, which usually occur along with stabilization cracks in the base in areas where there is little or no traffic such as on paved shoulders. The cracks are open up to 10mm wide with a raised edge like rim of a volcano.

(ii) Repair method

The crack shall be prepared by blowing out all loose material under pressure. The surface for a width of 300mm on either side of the crack should be treated with a rejuvenator or a solution of 1 part RC250 (or similar) and two parts diesel oil. The crack should be primed with an inverted emulsion prime as specified, tacked with a modified emulsion and filled with a rubber crumb slurry as specified. The raised areas around the crack shall be compacted with a vibratory roller (Bomag 90 or similar) until the area is level with the surrounding surface.

(c) Expansive soil cracks and longitudinal cracks

(i) Description

Expansive soil cracks are active cracks with cyclical movements related to the wet and dry seasons of the year. These cracks are generally open wide and deep extending down through the pavement to the subgrade. The cracks are often parallel to the centreline and occur mainly towards the edge of the road along the extent of shallow fills, fields and marshy areas.

Longitudinal cracks close to the edge of the road which are open, wide and deep, caused by settlement often occur where there are newly constructed high fills or widened sections and are normally parallel to the road centreline. Usually there is little vertical displacement across the settlement cracks. Conversely where slip failures occur in the pavement fill there are often noticeable vertical steps across the crack (lower towards the outside of the pavement) and the cracks form an arc towards the shoulder edge rather than a straight crack.

(ii) Repair method

The Contractor shall clean out loose material from the crack and fill the cracks with fine slurry of clean fine sand and lime (in equal parts) to the underside of the base layer. Alternatively wider cracks could be filled with fine dry sand. More than one filling may be necessary to fill the crack. Prime the crack with an inverted emulsion prime (MSP1), then Passive cracks tack the crack with a modified emulsion and fill the crack with a rubber crumb slurry as specified. Allow the emulsion to break and then apply a geofabric bandage or a prefabricated bitumen rubber seal patch. Where cracks occur in the fill slope fill the crack with bentonite (2%) and sand slurry to prevent ingress of water. Treat the top 100mm of fill material for a spade width about the crack with 2% bentonite and water and compact lightly to the shape of the slope.

(d) Surfacing cracks

(i) Description

Surfacing cracks occur randomly over the road surface in a map format (diamond shape). These cracks are often referred to as map cracks. In extreme cases the surface deteriorates to a pattern which resembles and can be mistaken for crocodile cracks. This distress mode is not accompanied by any marked deformation or pumping of fines.

(ii) Repair method

(e) Crocodile cracks

Blow out the cracks to remove all loose material. Apply MSP1 inverted bitumen emulsion to the surface and squeegee the emulsion into the cracks. Apply the fine slurry as specified in section M1600: Surface Treatment of Surface Roads and squeegee into the cracks.

(i) Description

Crocodile cracking is a series of small inter-linked near circular cracks often associated with pumping of fines in or after wet weather. It is accompanied by rutting of the pavement in the wheel-tracks and precedes pavement failure.

(ii) Repair method

(f) Long cracks

Limited areas of crocodile cracking can be treated as a holding measure by applying a geofabric "bandage" or a prefabricated road patch. The bandage should be protected/armoured by treating it with a further application of latex modified emulsion and a nominal 4,75mm grit (the use of crusher sand is not recommended) as per the supplier's specification.

(i) Description

Fairly straight single cracks which often occur along construction joints in the surfacing or base. Also quite common where the surfacing meets concrete channels and kerbs. The cracks are generally open but not wide (say less than 5mm). However, they tend to catch and hold water. Other random single passive cracks can be grouped under this description.

(ii) Repair method

Narrow cracks (< 3mm)

M1303 EXECUTION OF WORK

Blow out all loose material and grit from the cracks. Prime cracks with an inverted emulsion primer as specified. Fill the cracks with a stable grade anionic emulsion modified with an anionic latex (8% nett rubber on nett bitumen), or a cationic spray grade emulsion modified with a cationic latex. Materials are to be injected with the equipment under pressure as specified. The Contractor must take care not to apply prime or emulsion on the surface outside the cracks and all excess material shall be removed.

Wider cracks

Cracks could be filled with fine dry sand. More than one filling may be necessary to fill the crack. Prime the crack with an inverted emulsion prime (MSP1), then tack the crack with a modified emulsion and fill the crack with rubber crumb slurry as specified. Allow the emulsion to break and then apply a geofabric bandage or a prefabricated bitumen rubber seal patch. Where cracks occur in the fill slope fill the crack with bentonite (2%) and sand slurry to prevent ingress of water.

(a) Crack cleaning

The cracks shall be blown out with heated ("hot dog lance") or cold compressed air according to the method specified by the Employer's Agent. All dirt, grit and other base or foreign matter shall be blown out and removed from the cracks and road surface.

(b) Priming of cracks

Cracks shall be primed if specified using the prime injectors as detailed. The prime shall be jetted as deep as possible into the crack using compressed air propulsion. The sides of the cracks shall be thoroughly wetted without flooding the crack. The prime shall be allowed 12 hours to soak and dry, before the first application of crack sealant is applied. The primed cracks shall be kept clean at all times and if soiled it shall be re-cleaned at the Contractor's cost.

When heated air is used for crack cleaning, no priming will be required where so specified. In that case, the crack shall be filled with sealant within 8 minutes of the cleaning operation so that minimal heat is lost. If the crack is not filled within the prescribed time, the Contractor shall prime the crack at his own cost.

(c) Precautions

The sealant shall only be applied with pressure type spray equipment to ensure that the cracks are filled rather than covered.

The Contractor shall ensure that all equipment is kept clean so as to prevent blockages and resulting poor workmanship.

(d) Weather limitations

(i) The minimum road surface temperature at which the cracks will be sealed is 10°C.

(ii) No work will be allowed within 12 hours after rain has fallen on the sections to be sealed.

(iii) Crack sealing shall not take place when the conditions are excessively windy or dusty as determined by the Employer's Agent.

(e) General

M1304 MATERIAL

The Contractor is to note that one application of the sealant is generally insufficient and that a repetition of the application of the binder will be required. This reapplication forms part of the measured metre of crack sealing completed and is not measured separately. The type of bituminous binder/sealant used to seal/fill a crack will depend on the type of crack.

(a) Bituminous Binders

All bituminous binders, where applicable, shall conform to the following standards:

Penetration grade bitumens : SABS 307

Bitumen emulsions: Anionic : SABS 309

Bitumen emulsions: Cationic : SABS 548

(b) Prime

The prime shall consist of an "inverted emulsion" prime manufactured from a base bitumen of 80/100-penetration grade. An MSP1 prime or equivalent shall be used.

(c) Emulsion for cold applied sealant

The emulsion for the crack treatment shall consist of an Anionic Stable Grade Emulsion or Cationic Spray or Stable Grade Emulsion. When blended on site, "Revertex" or other rubber latex emulsion shall be added to the bitumen emulsion to give 8% net rubber on net bitumen content. If a proprietary brand blend is used, the constituents shall conform to the manufacturer's specification.

(d) Bitumen Rubber

(i) Rubber crumbs

The rubber obtained by processing and recycling tyres shall conform to the **TABLE M1304/1**

(ii) Extender Oil

The extender oil shall be a distillate of high aromatic and shall comply with the following requirements: **TABLE M1304/2:**

(iii) Diluent

The diluent shall be a hydrocarbon distillate.

(iv) Bitumen Rubber Blend

The actual value of penetration of the bitumen used shall also be stated on a certificate. The results of these tests must be reported to the Employer's Agent. The bitumen rubber blend containing extender oil and/or diluent, where necessary, shall comply with the following requirements: **TABLE M1304/3**

The pre-blended binder shall meet the following specifications when sampled five minutes, or less, before application: - **TABLE M1304/4**

BR 4T

The applicable bitumen rubber test methods appear in "Manual 3, 1988" of the SABITA publication entitled "Test Methods for Bitumen-rubber used in Seals".

The Contractor shall supply the Employer's Agent with the time/temperature relationships of the abovementioned properties for the specific product prior to commencement of the operation.

(e) Modified Bitumen

(i) General

The particular values within the limits of the specifications given below will depend on the specific application of the product and the technology employed by the manufacturer.

For each batch of modified bitumen, the manufacturer shall issue a certificate stating that the processes have been controlled during manufacture and handling.

The actual value and range of penetration of bitumen shall also be stated on the certificate. The results of these tests must be reported to the Employer's Agent daily.

(ii) Modified Bitumen Blend

The modified bitumen blend shall comply with the following requirements: - **TABLE M1304/5: MODIFIED BITUMEN BLEND**

BR 5T

Roundup or similar type of non-selective total herbicide, which is approved for this purpose by the Department of Agriculture.

(g) Rubber crumb slurry for filling cracks

This slurry is intended for filling wide cracks

The nominal composition of the rubber crumb slurry per volume shall be as follows: -

- 10,0 parts aggregate mixed as follows 8 parts rubber crumbs
2 parts crusher dust (2,36mm max size)
- 4,5 parts 60% anionic stable grade bitumen emulsion
- 1,1 parts SBR (net rubber) "Revertex" or equivalent
- 0,2 parts cement (CEM I)
- Water (as directed by the Engineer) (approximately 5 parts)

M1305 EQUIPMENT

(a) Blowing out cracks

The Contractor must provide a mobile compressor capable of discharging 3m³/min compressed air at 750kPa pressure. The compressed air shall be free of deleterious matter that may adversely affect the bond between the sealant and the cracks. The compressor shall be free of oil and diesel leaks.

A lance shall be used to direct the force of the air into the cracks and must be manoeuvrable enough to follow the path of the crack accurately.

If hot air is specified, the compressed air must be heated by a hot air lance capable of achieving a temperature of 300°C in the combustion chamber.

(b) Prime injectors

A special prime injector for injecting prime into open cracks using compressed air propulsion shall be manufactured. Essentially the equipment shall consist of a blowpipe with nozzle to direct the jet of compressed air into the cracks, a venturi or similar device shall be fitted to the blow pipe for sucking in prime from the storage vessel. A suitable throttling valve shall be fitted on the prime supply line to adjust the prime flow, i.e. to adjust the compressed air to prime ratio. The blow pipe shall be of approximately 20mm diameter steel tubing, threaded at the open end so that suitable bitumen spray nozzles can be fitted. The other end shall have a suitable coupling to connect to the compressor, complete with a shut-off valve to isolate the injector from the compressed air source.

The injectors, blowpipes, storage vessel interconnecting piping, *inter alia*, shall all be capable of safely withstanding the pressure generated by the compressors. Design sketches of the equipment shall be submitted to the Employer's Agent for approval.

(c) Sealant

The sealant shall be applied through an applicator manufactured specifically for this purpose. Essentially the equipment for the hot sealant shall consist of a mobile vessel capable of heating the sealant to the required application temperature by indirect heat, controlled by a thermostat to prevent overheating. A calibrated thermometer shall be fitted in an accessible position to accurately measure the sealant temperature in the tank. Special pumps, which can deliver the sealant to the crack in a controlled fashion, shall be used.

Proprietary brand seals shall be applied as specified by the suppliers.

(d) Seal bandage

The bandage shall be applied according to the manufacturers specification and recommended applying techniques.

(e) Equipment for the application of modified bitumen emulsion in small cracks where applicable

The modified bitumen emulsion shall be applied in a controlled manner using pressure type spray equipment with lances fitted with 2mm nozzles. A backpack type spray unit may be used. Under no circumstances will buckets, watering cans or tins be used to apply the sealant.

(f) Rectifying raised crack edges

A vibrating pedestrian roller of (Bomag 90 or similar) shall be used to roll the raised crack edges.

M1306 ACCEPTANCE CRITERIA

The work shall be executed and finished strictly in accordance with the prescribed requirements.

The sealed cracks shall be watertight, look neat and the sealant shall not project above the road surface by more than 3mm.

M1307 MEASUREMENT AND PAYMENT

M1300 SEALING OF ACTIVE CRACKS

Item	Unit
M130.01 Cleaning of active cracks with hot compressed air and sealing the crack as specified for:	
(a) Stabilisation cracks	
(i) Without bandage	meter (m)
(ii) With bandage (state type and size)	meter (m) (Class 3 or similar approved by Employer's Agent)
(b) Volcano cracks	meter (m)
(c) Expansive side cracks	meter (m)
(d) Longitudinal cracks	meter (m)

The unit of measurement for item M130.01 (a), (b), (c) and (d) shall be the meter of crack sealed as specified measured after the crack has been sealed to the satisfaction of the Employer's Agent.

The tendered rate shall include full compensation for furnishing and procuring the materials and equipment and labour, for cleaning the crack with hot compressed air as specified, applying the sealant, re-applications where necessary or applying the seal bandage, cleaning, curing, finishing and all other incidentals necessary for hot sealing the cracks as specified.

Item	Unit
M130.02 Cleaning of active cracks with cold compressed air, priming and sealing the crack as specified:	
(a) Stabilisation cracks	
(i) Without bandage	metre (m)
(ii) With bandage (state type and size)	metre (m)
(b) Volcano cracks	metre (m)
(c) Expansive side cracks	metre (m)
(d) Longitudinal cracks	metre (m)

The unit of measurement for item M130.02 (a), (b), (c) and (d) shall be the meter of crack sealed as specified measured after the crack has been sealed to the satisfaction of the Employer's Agent.

The tendered rate shall include full compensation for furnishing and procuring the materials and equipment and labour, for cleaning the crack with compressed air as specified, priming, applying the sealant, re-applications where necessary or applying the seal bandage, cleaning, curing, finishing and all other incidentals necessary for hot sealing the cracks as specified.

M1310 SEALING OF PASSIVE CRACKS

Item	Unit
M131.01 Cleaning of passive cracks with hot compressed air and sealing the cracks as specified for:	
(a) Surfacing cracks square	metre (m)
(b) Crocodile cracks square	metre (m)
(c) Longitudinal cracks	metre (m)

The unit of measurement for item M131.01 (a) and (b) shall be the square meter of surface area sealed as specified measured after the cracks have been sealed to the satisfaction of the Employer's Agent.

The unit of measurement for item M131.01 (c) shall be the meter of crack sealed as specified measured after the crack has been sealed to the satisfaction of the Employer's Agent.

The tendered rate shall include full compensation for furnishing and procuring the materials and equipment and labour, for cleaning the crack with hot compressed air as specified, applying the sealant, re-applications where necessary or applying the seal bandage, cleaning, curing, finishing and all other incidentals necessary for hot sealing the cracks as specified.

Item	Unit
M131.02 Cleaning of passive cracks with cold compressed air, priming and sealing the cracks as specified for:	
(a) Surfacing cracks square	meter (m)
(b) Crocodile cracks square	meter (m)
(c) Longitudinal cracks	meter (m)

The unit of measurement for item M131.02 (a) and (b) shall be the square meter of surface area sealed as specified measured after the cracks have been sealed to the satisfaction of the Employer's Agent.

The unit of measurement for item M131.02 (c) shall be the meter of crack sealed as specified measured after the crack has been sealed to the satisfaction of the Employer's Agent.

The tendered rate shall include full compensation for furnishing and procuring the materials and equipment and labour, for cleaning the crack with hot compressed air as specified, applying the sealant, re-applications where necessary or applying the seal bandage, cleaning, curing, finishing and all other incidentals necessary for hot sealing the cracks as specified.

M1320 CRACK SEALING PER INDIVIDUAL ITEM

Item	Unit
M132.01 Crack sealing per individual item (Items to be used on the instruction of the Employer's Agent only)	
(a) Blowing out of cracks	
(i) Treated per meter	meter (m)
(ii) Treated per area	hour (h)
(b) Priming of cracks (MSP1 or similar)	meter (m)
(c) Sealant (state type of hot applied sealant)	meter (m)
(d) Seal bandage (state type of hot applied sealant and width)	meter (m)

The unit of measurement for sub-item M132.01 (a)(i), the complete process of blowing out cracks shall be the linear meter of crack blown out as specified.

The unit of measurement for sub-item M132.01 (a)(ii), the blowing out of the cracks over an area where sub-item M132.01 (a) (i) is not applicable, shall be the number of hours the compressor was actually used.

The tendered rates shall include full compensation for furnishing all equipment, labour, blowing out cracks, cleaning up and re-blowing if necessary, finishing and all other incidentals necessary for blowing out the cracks

as specified. The tendered rates shall also include full compensation for furnishing and using the compressor, costs of fuel, operators, and maintenance, transporting the machine to and from site and for all other incidentals.

The unit of measurement for sub-item M132.01 (b), supplying and jetting the bitumen emulsion prime, shall be the meter of cracks primed.

The tendered rate shall include full compensation for furnishing and procuring the materials and equipment, for labour, jetting in the prime, cleaning, curing, finishing and all other incidentals necessary for priming the cracks as specified.

The unit of measurement for sub-item M132.01(c), sealing the crack shall be the metre of cracks sealed. Payment shall distinguish between a hot bitumen-rubber seal, or alternatively, the proprietary brand seals.

The tendered rate shall include full compensation for furnishing and procuring the materials and equipment, for labour, applying the sealant, re-applications where necessary, cleaning, curing, finishing and all other incidentals necessary for cold sealing the cracks as specified. The unit of measurement for sub-item M132.01 (d), covering the crack shall be the metre of seal bandage applied over the crack.

The tendered rate shall include full compensation for furnishing and procuring the materials and equipment, for labour, applying the tack coat, the seal bandage and wearing coat, if applicable, cleaning, curing, finishing and all other incidentals necessary for applying the seal bandage according to the manufacturers specification and to the satisfaction of the Employer's Agent.

The tendered rate shall include full compensation for furnishing and procuring the materials and equipment, for labour, applying the softening agent, allowing for the time delays specified, rolling of the crack, cleaning, curing, finishing and all other incidentals necessary to complete the works to the satisfaction of the Employer's Agent.

SERIES M1000: PAVEMENT MAINTENANCE

SECTION M1400: BLEEDING REPAIR

CONTENTS

M1401 SCOPE
M1402 EXECUTION OF WORK
M1403 MATERIAL
M1404 ACCEPTANCE CRITERIA
M1405 MEASUREMENT AND PAYMENT

M1401 SCOPE

This section covers the work required to correct bleeding occurring on bituminous road surfaces.

M1402 EXECUTION OF WORK

(a) General

Bleeding shall be rectified by applying nominal size aggregates to the road surface according to the method instructed by the Employer's Agent. The Employer's Agent shall determine the size of aggregate, which the affected surface can accommodate.

Aggregates shall be coated with precoating fluid when required by the Employer's Agent.

This work shall be affected only when the road temperature is high enough to promote embedment and adhesion.

Only a heavy pneumatic-tyre roller of at least 15 tons shall be used for rolling in the aggregate.

Sites for the stockpiling of untreated aggregates as well as precoated aggregates shall be prepared in such a manner that no grass, weed, dirt or other deleterious material will be included when the aggregates are loaded for use.

(b) Repair methods

Depending on the extent of bleeding, the Employer's Agent may instruct one or more of the following methods for bleeding repair:

(i) Method 1

If required, power paraffin will be applied to the surface, at an application rate as specified or instructed by the Employer's Agent.

The most suitable size of aggregate, as determined by the Employer's Agent, shall be spread at the required application rates. Rolling shall commence and be continued until the Employer's Agent is satisfied that all the aggregate has been properly embedded. No rolling shall be done in wet weather, cold weather or early in the morning when the surface is cold. A minimum road temperature of 30°C shall be required unless otherwise approved by the Employer's Agent.

(ii) Method 2

A tack coat shall be applied to the surface, at an application rate as specified or as instructed by the Employer's Agent. Immediately after the tack coat has been sprayed, it shall be covered with aggregate of the required size and at an application rate as specified or instructed by the Employer's Agent. Initial rolling shall be done with a pneumatic-tyre roller until the area is covered at least three times. Any area deficient of aggregate shall have additional material added so as to leave the surface with a single layer of chippings. Final rolling shall be done with a pneumatic-tyre roller, applying a minimum of four passes. All loose aggregate shall be broomed off the surface.

A fog spray of either 60% or 30% anionic emulsion shall be applied to the surface of the aggregate by means of a pressure distributor at the required rate. When required, the Employer's Agent may instruct a light blinding layer to be applied evenly over the indicated surface to prevent chippings from being picked up by traffic. The layer shall be spread evenly with hand brooms.

(c) Application rates

The following nominal application rates shall apply: SEE **TABLE M1402/1**
The fog spray shall be applied at a rate of 0,8 liter per m²
The maximum permissible variation from the ordered rates of application shall be plus or minus 5%.

M1403 MATERIAL

(a) Aggregates

The aggregates for bleeding correction shall consist of 4,75mm nominal size aggregate or natural sand complying with the requirements of Table M1403/1 and Table M1403/2.

The Contractor shall provide the Employer's Agent with proof that the aggregates comply with the specified requirements.

(b) Emulsion

Emulsion shall comply with the following specifications:

Anionic emulsion : SABS 309
Cationic emulsion : SABS 548

(c) Precoating fluid

The type and application of the precoating fluid shall be sacrosote 70 or similar approved product.

The untreated stockpile of aggregate shall be thoroughly sprayed with water, which shall be allowed to drain off. The damp aggregate shall then be evenly coated with the precoating fluid applied at a rate as specified in Table M1402/1.

Precoated aggregate shall not be used immediately after precoating but shall be held in stockpile and turned frequently until the volatiles in the precoating fluid have evaporated and the aggregate is dry before being applied to the road.

M1404 ACCEPTANCE CRITERIA

Corrective work shall be carried out in such a manner as to blend in as far as possible with the adjacent road surfacing, with respect to texture and surface finish.

All loose stone broomed off the surface shall be suitably disposed of and not left in drainage channels or on the side of the road.

M1405 MEASUREMENT AND PAYMENT

M1400 BLEEDING REPAIR

Item	Unit
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Correction for bleeding (Method 1)

Bleeding correction using the following aggregate sizes:

(a) 13,2mm	square meter (m ²)
(b) 9,5mm	square meter (m ²)
(c) 6,7mm	square meter (m ²)

The unit of measurement shall be the square meter of road surface treated, and repaired by application of aggregate at required spread rates as specified for Method 1.

The tendered rates shall include full compensation for providing and furnishing materials including all transport and stockpile of aggregate if required.

Item	Unit
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Correction of bleeding (Method 2)

Bleeding correction using the following aggregate sizes:

(a) 13,2mm	square metre (m ²)
(b) 9,5mm	square metre (m ²)
(c) 6,7mm	square metre (m ²)

The unit of measurement shall be square meter of corrected bleeding area as specified for Method 2.

The tendered rates shall include full compensation for furnishing all materials, spraying the tack coat, spreading of aggregate, rolling and all other incidentals necessary for completing the work as specified for Method 2.

Item	Unit
Pre-coating of aggregate	cubic meter (m ³)

The unit of measurement shall be cubic meter of material pre-coated.

The tendered rate shall include full compensation for pre-coating the material as specified, for procuring and furnishing the pre-coating material and for all handling, loading and off-loading of all materials.

Item	Unit
Aggregate variations	
(a) 13,2mm	cubic metre (m ³)
(b) 9,5mm	cubic metre (m ³)
(c) 6,7mm	cubic metre (m ³)

The unit of measurement shall be cubic metre of increased or decreased aggregate applied as compared to the quantities required at nominal application rates.

Item	Unit
M140.05 Bituminous binder variations (type selected)	litre (l)

The unit of measurement of bituminous binder including pre-coating fluid, in respect of an increase or decrease in the specified nominal rates of application shall be the litres measured at spraying temperature. Payment for variations shall be made as specified in Clause M0226.

Item	Unit
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M140.06 Application of fog spray:

- | | |
|------------------------------|-----------|
| (a) 60% Spray-grade emulsion | litre (l) |
| (b) 30% Spray-grade emulsion | litre (l) |

The unit of measurement shall be the litre of fog spray applied at the specified rate measured at spraying temperature.

The tendered rates shall include full compensation for furnishing the material and applying the fog spray as specified.

Item	Unit
M140.07 Aggregate for blinding using	
(a) Natural sand	cubic metre (m ³)
(b) Crusher sand	cubic metre (m ³)

The unit of measurement shall be the cubic metre of sand measured in the hauling vehicles or in stockpile.

The tendered rates shall include full compensation for providing the material and applying the blinding coat complete as specified, and, should it be required, stockpiling the sand at an approved location.

SERIES M1000 : PAVEMENT MAINTENANCE

SECTION M1600 : SURFACE TREATMENT OF SURFACED ROADS

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M1601 SCOPE
M1602 APPLICATIONS
M1603 MATERIAL
M1604 CONSTRUCTION
M1605 MEASUREMENT AND PAYMENT

M1601 SCOPE

This section covers the application of slurry to existing road surfaces as texture treatment and for rut filling.

M1602 APPLICATIONS

- (a) Texture treatment

This treatment shall be used whenever necessary to treat an existing surface with an open texture or excessive aggregate loss, using bituminous slurry.

Before the surface is treated with a slurry, a tack coat of 30% stable-grade emulsion shall be sprayed onto the surface at an application rate of 0,5 liter per m²

Fine or medium grade slurry as specified in the Project Specifications shall be applied by hand over open-textured areas of the existing surfacing. Such areas could be odd-shaped or occurring in longitudinal strips on the existing road surface. The slurry shall be thoroughly worked into the open texture of the surfacing with squeegees and struck off neatly to expose the macro aggregates in the existing surfacing. Each application of slurry shall be compacted with a pneumatic roller to a minimum of six passes with a mass of at least 15 tons as soon as the slurry sets. Depending on the weather conditions no compaction shall be done after 6 hours or as instructed by the Employer's Agent.

A mechanical spreader box may also be used to apply slurry if so directed by the Employer's Agent. In such a case the nominal application rate for tender purposes is 0,004m³/m²

The slurry may be mixed in a suitable concrete or other mobile mixer but the condition of the paddles and the mixer shall be such that complete blending of the constituents of the slurry is achieved.

- (b) Rut filling

Medium or coarse grade slurry as specified in the Project Specifications shall be applied to fill ruts up to a maximum of 15mm in the existing surfacing, and shall be applied in either a single or double application using a spreader box fitted with rigid squeegees. The number of applications shall be determined by the Employer's Agent depending on the depth of rut to be filled. Each application of slurry shall be compacted to a minimum of six passes with a pneumatic roller with a mass of at least 15.

The application of slurry shall, in all cases terminate at such a time during the day to allow traffic onto the slurry before sunset, or as indicated by the Employer's Agent.

M1603 MATERIAL

(a) Aggregate for slurry

The aggregate for slurry shall be an approved crusher sand obtained from a parent rock having an ACV not exceeding 30 or a mixture of crusher sand and clean natural sand, where the mixture does not contain more than 25% of natural sand.

The aggregate shall be clean, tough, durable, angular in shape, and shall conform to the following grading requirements: SEE **TABLE M1603/1**

The sand equivalent of aggregates according to TMH1 method B19 shall be 35 minimum.

To ensure proper adhesion, the immersion index of briquettes made with slurry aggregate and 80/100 penetration-grade bitumen shall be not less than 75 when tested in accordance with method C5 of TMH1.

(b) Cement filler for slurry

CEM I cement (Portland cement) and CEM III A cement (PBFC) shall comply with the requirements of ENV 197-1.

Only one of the above materials shall be used throughout, as alternate usage will produce undesirable colour differences in the surface.

(c) Bitumen emulsions

Anionic and cationic and stable-grade bitumen emulsion shall comply with the provisions of SABS 309 and SABS 548 respectively.

The type and grade of bituminous binder to be used shall be as specified in the Project Specifications.

(d) Slurry mix

The composition of slurry shall be based on the following mass proportions for tender purposes:

- (i) Slurry aggregate (dry) : 100 parts
- (ii) Stable-grade emulsion : 16 parts
- (iii) Cement (Portland) : 1,5 parts
- (iv) Water : ± 15 parts

The volume of water in the slurry mix, shall be such that the consistency of the slurry is between 30mm and 40mm when measured in accordance with the test method, Appendix G in TRH3-1998.

M1604 CONSTRUCTION

All areas shall be cleaned of all dust, dirt, oil or any other foreign matters that may be deleterious to the slurry. The area to be slurried shall be clearly demarcated.

Prior to applying the slurry, the tack coat shall be applied to the surface. The rate of application of slurry shall be measured in cubic metres of fine aggregate (saturated volume) contained in the slurry applied per square metre of surfacing as accepted by the Employer's Agent.

The squeegee squad shall be allowed to complete the spreading of each batch discharged onto the road, using squeegees, before the next is discharged.

The Contractor shall ensure that the edges of the patch are finished to the specified widths and lines. All stones dislodged in the process of applying the slurry shall be removed on the same day on which the slurry seal has been applied. All spilled or excess of slurry shall be neatly removed from the road and disposed of as directed by the Employer's Agent.

Any damage to the slurry seal by rain or traffic before the slurry has cured shall be rectified by the Contractor at the Contractor's own expense.

M1605 MEASUREMENT AND PAYMENT

M1600 SURFACE TREATMENT – TEXTURE CORRECTION

Item	Unit
M160.01 Application of slurry mixed on site	
(a) Tack coating using 30% bitumen emulsion	litre (l)
(b) Slurry applied for texture treatment (state grading and type of binder)	
(i) Applied by hand	cubic metre (m ³)
(ii) Applied by spreader box	cubic metre (m ³)

The unit of measurement for tack coat shall be the litre of emulsion measured at spraying temperature and for slurry applied by hand or spreader box shall be the cubic metre of saturated aggregate used.

The tendered rates shall include full compensation for procuring and furnishing all the materials, for mixing and applying the slurry, demarcating all areas to be treated and for all equipment, labour and incidentals necessary to complete the work as specified including compacting with pneumatic roller.

M160.02 Application of slurry from commercial sources

Item	Unit
(a) Tack coating using 30% bitumen emulsion	litre (l)
(b) Slurry applied for texture treatment (state grading and type of binder)	
(i) Applied by hand	cubic metre (m ³)
(ii) Applied by spreader box	cubic metre (m ³)

The unit of measurement for tack coat shall be the litre of emulsion measured at spraying temperature and for slurry applied by hand or spreader box shall be the cubic metre of saturated aggregate used.

The tendered rates shall include full compensation for procuring and furnishing all the materials, for mixing and applying the slurry, demarcating all areas to be treated and for all equipment, labour and incidentals necessary to complete the work as specified including compacting with pneumatic roller.

M1610 SURFACE TREATMENT – RUT FILLING

Item	Unit
M161.01 Application of slurry for rut filling mixed on site	
(a) Slurry applied by spreader box with rigid squeegees in one application for rut filling (state grading and type of binder)	cubic metre (m ³)
(b) Slurry applied by spreader box with rigid squeegees in two applications for rut filling (state grading and type of binder for each application separately)	cubic metre (m ³)
(c) Tack coat using 30% bitumen emulsion for rut filling	litre (l)

The unit of measurement for tack coat shall be the litre of emulsion measured at spraying temperature and for slurry applied by hand or spreader box shall be the cubic metre of saturated aggregate used.

The tendered rates shall include full compensation for procuring and furnishing all the materials, for mixing and applying the slurry, demarcating all areas to be treated and for all equipment, labour and incidentals necessary to complete the work as specified including compacting with pneumatic roller.

Item	Unit
M161.02 Application of slurry for rut filling from commercial sources	

(a) Slurry applied by spreader box with rigid squeegees in one application for rut filling (state grading and type of binder)	cubic metre (m ³)
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(b) Slurry applied by spreader box with rigid squeegees in two applications for rut filling (state grading and type of binder for each application separately) cubic metre (m³)

(c) Tack coat using 30% bitumen emulsion for rut filling litre (l)

The unit of measurement for tack coat shall be the litre of emulsion measured at spraying temperature and for slurry applied by hand or spreader box shall be the cubic metre of saturated aggregate used.

The tendered rates shall include full compensation for procuring and furnishing all the materials, for mixing and applying the slurry, demarcating all areas to be treated and for all equipment, labour and incidentals necessary to complete the work as specified including compacting with pneumatic roller.

SERIES M2000 : DRAINAGE MAINTENANCE

SECTION M2100 : REPAIR AND MAINTENANCE OF INLET AND OUTLET STRUCTURES

CONTENTS

M2101 SCOPE
M2102 EXECUTION OF WORK
M2103 ACCEPTANCE CRITERIA
M2104 MATERIALS
M2105 MEASUREMENT AND PAYMENT

M2101 SCOPE

This section covers the work in connection with, and where required, the maintenance and repairs of existing inlet and outlet structures.

M2102 EXECUTION OF WORK

The repairs to inlet and outlet structures shall be carried out where directed by the Employer's Agent. Repairs to existing inlet and outlet structures may involve the complete or partial demolition of these structures and the reconstruction or repair thereof as instructed by the Employer's Agent.

(a) Excavation

The size of excavation shall be the neat outside dimension of the structure, plus an allowance of 0.5m of working space around the structure.

Where unstable material is encountered below the founding level of the concrete floor slab of the structure it shall be removed to a depth ordered by the Employer's Agent. Unsuitable material removed shall be replaced with gravel or other approved material compacted to the density at which the penetration is measured by a DCP not exceeding 10mm per blow.

(b) Classification of excavation

All excavations for inlet and outlet structures shall be classified for payment purposes as follows:

Hard material: Material that cannot be excavated except by drilling and blasting or with the use of pneumatic tools or mechanical breakers.

Soft material: All material not classified as hard material shall be classified as soft material.

Notwithstanding the above classification, all material excavated from existing fills and pavement layers shall be classified as soft material.

(c) Disposal of excavated material

All excavated material not suitable for backfilling material shall be removed and disposed of where directed by the Employer's Agent. Material suitable for use in the works, however, shall be used as ordered.

(d) Removal of damaged structures

Damaged inlet and outlet structures shall be demolished as ordered by the Employer's Agent and the material removed to spoil where directed.

(e) Repairing of existing inlet and outlet structures

Where fresh concrete is cast against old concrete, the contact surface shall be roughened and cleaned of all dirt and loose particles. Fresh concrete shall be bonded to old concrete by applying durapox or approved equivalent epoxy resin slurry. If dowels are required, they shall be installed in holes drilled into the existing structure according to details shown on drawings or as instructed by the Employer's Agent. Dowels shall be secured by means of an approved epoxy resin grout.

Where existing stone masonry head- and wing-walls are to be repaired, it is the intention to again make use of stone masonry construction. If suitable rock is not available from areas next to the road, commercial rock may be ordered as allowed in the Schedule of Quantities.

(f) Backfilling to inlet and outlet structures

The backfill material shall be material selected from the excavation, mixed with 80kg Portland cement for every cubic metre of material.

Generally the backfill material shall be sandy material, but may contain larger particles up to 38mm and shall have a plasticity index not exceeding 12.

The soil cement shall be mixed on site with suitable concrete mixers and the water and cement content shall be carefully controlled. Hand mixing will not be permitted.

Material for backfilling alongside the structures shall be placed at optimum moisture content and compacted in layers not exceeding 150mm after compaction and when tested with a dynamic cone penetrometer the average penetration rate recorded at every 5 blows for each layer shall not exceed 50mm. The full depth of a layer shall be tested.

M2103 ACCEPTANCE CRITERIA

Inlet and outlet structures shall be repaired neatly to the dimensions specified.

Structural repair shall be in uniformity with the existing structure.

M2104 MATERIALS

(a) Concrete

Concrete for the various structural components shall comply with the class specified by the Employer's Agent.

(b) Bricks

Bricks shall be Employer's Agenting grade bricks conforming to the requirements of SABS227.

Brickwork shall be built in English bond with mortar consisting of one part cement and six part of sand or in stretcher bond where its wall thickness does not exceed 115mm.

(c) Plaster

Where the plastering of brickwork is required all joints shall be well raked out and the brick face thoroughly wetted before plastering is applied. Plaster shall consist of one part of cement to four parts of approved sand and shall be applied not less than 12mm or more than 20mm thick.

(d) Manhole covers, grid inlets, *inter alia*

Manhole covers and frames, grid inlets and other metal accessories shall be supplied and/or manufactured in accordance with the details shown on the drawings or as instructed by the Employer's Agent.

(e) Stone masonry

Only durable rock fragments shall be used for the repair of existing stone masonry inlet and outlet structures. The rock fragments shall not exceed 300mm in diameter and shall not be smaller than 100mm in diameter. The mortar used to construct stone masonry walls shall consist of one part cement and six parts of sand.

M2105 MEASUREMENT AND PAYMENT

M2100 REPAIR AND MAINTENANCE OF INLET AND OUTLET STRUCTURES

Item	Unit
M210.01 Excavation	cubic metre (m ³)

The unit of measurement shall be the cubic metre of material excavated measured down from the existing ground profile to the depth ordered or as shown on the drawings. The outside dimensions for determining the volume of the excavation shall be the neat outside plan dimensions of the structure, plus an allowance of 0.5m of working space around the structure.

The tendered rate shall include full compensation for all excavation, temporary timbering, shoring and strutting for preparing the bottom of the excavation for the floor slab, the disposal of excavated material unsuitable for backfilling and keeping excavations safe.

The tendered rate shall include full compensation for transporting the excavated material for a free-haul distance of 1.0km.

Item	Unit
M210.02 Backfilling	
(a) Using the excavated material	cubic metre (m ³)
(b) Using stabilised excavated material	cubic metre (m ³)

The unit of measurement shall be the cubic metre of material in place around the structure after compaction. The quantity shall be calculated from the leading dimensions of the backfilling as specified or as authorised by the Employer's Agent. Backfilling to over excavation shall not be paid for.

The tendered rates shall include full compensation for backfilling under the floor slab where required alongside the structure, for watering, and backfill to the specified requirements. The tendered rates for stabilised backfill shall include full compensation for providing and mixing the stabilising agent with the natural material.

Item	Unit
M210.03 Reconstruction of inlet and outlet structures	
(a) In concrete (class indicated)	cubic metre (m ³)
(b) In brickwork	cubic metre (m ³)
(c) Plastering	square metre (m ²)

The unit of measurement shall be the cubic metre of concrete constructed in place.

The unit of measurement for plastering shall be square metre of brickwork plastered.

The tendered rates shall include full compensation for procuring all material and all work necessary for constructing the structures to the authorised dimensions. In the case of concrete work the tendered rate shall include for providing and erecting the formwork and for benching the inverts.

Item	Unit
M210.04 Accessories	
(a) Provisional sum for the cost of accessories	Provisional sum (Prov Sum)
(b) The Contractor's overhead charges and profit in connection with providing the service percentage (%) The provisional sum items shall be paid for in accordance with the provision of the GCC 2015 3 rd edition	

The tendered percentage for provisional sum items is a percentage of the amount actually spent, which shall include full compensation for the overhead costs of the Contractor, and the profit in connection with providing the service.

Item	Unit
M210.05 Demolition of existing structures	

(a) Plain concrete	cubic metre (m ³)
(b) Reinforced concrete	cubic metre (m ³)
(c) Brickwork	cubic metre (m ³)
(d) Stone masonry	cubic metre (m ³)

The unit of measurement shall be the cubic metre of existing material removed.

The tendered rate shall include full compensation for demolishing and for loading, transporting and disposing of the material including a free-haul of 1.0km.

Payment shall distinguish between plain and reinforced concrete. For the purposes of this item, reinforced concrete shall be defined as concrete containing at least 0.2% of steel reinforcement measured by volume.

Item	Unit
M210.06 Repairing of existing structures (type indicated)	
(a) Concrete (class indicated)	cubic metre (m ³)
(b) Bricks	cubic metre (m ³)
(c) Stone masonry with rock material obtained from	
(i) Natural sources	cubic metre (m ³)
(ii) Commercial sources	cubic metre (m ³)
(d) Plastering	square metre (m ²)

The unit of measurement shall be the cubic metre of concrete, bricks or stone masonry used in place for repairs, with distinction being made in the source for obtaining rock material.

The unit of measurement for plastering shall be the square metre of brickwork plastered.

The tendered rate shall include full compensation for procuring all material and for all work necessary for reinstating demolished sections to the authorised dimensions. In the case of concrete work the tendered rate shall include for providing and erecting formwork, the preparation and treatment of surfaces as specified for joining old and new concrete as well as the installation of dowels as specified.

Item	Unit
M210.07 Steel reinforcement	
(a) Mild steel bars	ton (t)
(b) High tensile steel bars	ton (t)
(c) Welded steel mesh	kilogram (kg)

The unit of measurement for steel bars shall be the ton of reinforcing, and kilogram of welded steel mesh in place in accordance with the drawings or as authorised. Ties, stools and other steel used for positioning the reinforcing steel shall be measured as steel reinforcement.

The tendered rate shall include full compensation for supplying, delivering, cutting, bending, welding, trial weld joints, placing and fixing the steel reinforcement including all tying wire, spacers and waste.

Item	Unit
M210.08 Overhaul on materials for haul in excess of 1.0km	
(a) Excavated material to spoil	cubic metre kilometer (m ³ -km)
(b) Existing structures demolished	cubic metre kilometer (m ³ -km)

The unit of measurement shall be the cubic metre of material hauled in excess of 1,0km, volume of material measured loose in truck in the case of excavated material transported to spoil and in the case of demolished material the actual volume of material demolished in place measured before demolition, all multiplied by the overhaul distance.

The tendered rate shall include full compensation for hauling the material in excess of the freehaul distance.

SERIES M2000 : DRAINAGE MAINTENANCE

SECTION M2400 : CLEANING OF PREFABRICATED CULVERTS

CONTENTS

- M2401 SCOPE
- M2402 EXECUTION OF WORK
- M2403 ACCEPTANCE CRITERIA
- M2404 INSPECTION OF PREFABRICATED CULVERTS FOR PAYMENT
- M2405 MEASUREMENT AND PAYMENT

M2401 SCOPE

This section covers the cleaning of prefabricated culverts. The work involved under this section is the removal of silt and debris from the prefabricated culverts and the removal and clearing of vegetation, silt and debris from the inlet and outlet areas as shown on the drawing.

M2402 EXECUTION OF WORK

All prefabricated culverts, inlet and outlet areas up to the end of the road reserve as shown on the drawing shall be cleaned initially within the first two months of the contract period and kept clean thereafter.

Material removed shall be disposed of in close proximity of the culverts within the road reserve or loaded and transported to spoil at dumping areas approved by the Employer’s Agent.

Material spoiled near the culverts shall be spread neatly well clear of the top of drainage trenches where it cannot wash back.

M2403 ACCEPTANCE CRITERIA

Cleaning of prefabricated culverts

The culverts, inlet and outlet areas shall be kept clean, not allowing more than 20% of vertical height to be filled with silt or debris at any position of the culvert or at the inlet and outlet areas of the culvert.

M2404 INSPECTION OF PREFABRICATED CULVERTS FOR PAYMENT

Cleaning of prefabricated culverts

Inspection for the cleaning will be based on the following:

- Inspection of the prefabricated culverts will be monthly.
- The road will be broken up in 1km sections for inspections.
- The total length of road shall be divided by 20 to determine the number of sections to be inspected. A maximum number of 10 sections and a minimum of 4 shall be inspected and the positions will be chosen randomly. (The same sections of road will apply for section M2500 & M2700).
- If one prefabricated culvert in a 1km section of road does not comply with the acceptance criteria, that section fails.
- There will be no inspection for 3 days after it has rained in the catchment area of the section of road identified for inspection.
- The Contractor will be penalised by the number of failed sections multiplied by the penalty amount as specified in the Project Specifications for not complying with the specifications.

M2405 MEASUREMENT AND PAYMENT

M2400 CLEANING OF PREFABRICATED CULVERTS

Item	Unit
M240.01 Cleaning of prefabricated culverts, inlet and outlet areas	month

The tendered rate per month shall include full compensation for removing the material and vegetation from the culverts, inlet and outlet areas for loading the material onto trucks, for transporting the material and spoiling the material as specified. Overhaul must be included in the rate and there will be no extra payment for overhaul in excess of the free haul distance.

SERIES M2000 : DRAINAGE MAINTENANCE

SECTION M2500 : CLEANING OF CONCRETE DRAINS AND CHANNELS

CONTENTS

M2501 SCOPE

M2502 EXECUTION OF WORK

M2503 ACCEPTANCE CRITERIA

M2504 INSPECTION OF CONCRETE DRAINS AND CHANNELS FOR PAYMENT

M2505 MEASUREMENT AND PAYMENT

M2501 SCOPE

This section covers the work in connection with the removal of silt, debris and vegetation causing obstruction to flow in concrete drainage channels, *inter alia*, side drains, median drains, kerb-channelling combinations, down chutes and any other concrete drains or concrete channels and armco/plastic chutes,.

M2502 EXECUTION OF WORK

Silt and debris at grid inlets and concrete channel outlets shall be removed once a week during the rainy season and twice a month thereafter or as instructed by the Employer's Agent.

Material removed from channels shall either be loaded and transported to designated spoil sites or disposed of adjacent to channels where it cannot wash back into the channel within the road reserve as approved by the Employer's Agent.

Where material is spoiled adjacent to channels the Contractor shall ensure that the material is spread neatly and well clear of the top of the channels where it cannot wash back. Material removed from kerb and channel combinations, side drains in cuts and median drains or from other channels where directed by the Employer's Agent shall be transported to spoil.

Vegetation growing in channel joints and cracks shall be removed with roots to prevent regrowth.

Vegetation growing over channels from the edges shall be slashed at the concrete edges and disposed of. Undesirable vegetation shall be removed with roots and spoiled where directed by the Employer's Agent.

Silt debris and vegetation removed shall not be thrown up against cut or down fill slopes.

M2503 ACCEPTANCE CRITERIA

Cleaning of concrete drainage channels and grid inlets.

All side drains, median drains, kerb-channelling combinations, down chutes and any other concrete drains or concrete channels shall be kept clean, allowing at least 90% of the design waterway capacity to be available.

The vegetation growing over channels from the edges shall not be more than 5% of the area of the channels.

M2504 INSPECTION OF CONCRETE DRAINS AND CHANNELS FOR PAYMENT

Cleaning of concrete drainage channels

Inspection for the cleaning of concrete drainage channels will be based on the following:

- Inspection of the concrete drains and channels will be monthly.
- The road will be broken up in 1km sections for inspection.
- The total length of road shall be divided by 20 to determine the number of sections to be inspected. A maximum number of 10 sections and a minimum of 4 shall be inspected and the positions will be chosen randomly. (The same sections of road will apply for section M2400 & M2700).
- If more than 3 positions are identified that do not comply with the acceptance criteria, that section fails.
- There will be no inspection for 3 days after it has rained in the catchment area of the section of road identified for inspection.

□ The Contractor will be penalised by the number of failed sections multiplied by the penalty amount as specified in the Project Specifications.

M2505 MEASUREMENT AND PAYMENT

M2500 CLEANING OF CONCRETE DRAINS AND CHANNELS

Item	Unit
M250.01 Cleaning of concrete drainage channels	month

The tendered rate is per month and shall include full compensation for all labour and equipment required for removing the material from channels irrespective of the depth of silt and debris and for loading, off-loading and spreading when material removed is intended for spoiling at approved spoil sites.

The tendered rates shall also include for transporting the excavated material to approved spoil sites in excess of the free haul distance.

Where material is disposed of adjacent to the channels, the tendered rate shall include full compensation for removing the material from the channels, irrespective of the depth of silt and debris, spoiling and spreading the material adjacent to the channel where it cannot be washed back into the channel.

Item	Unit
M250.02 Extra over for sweeping of concrete drainage channels	month

The tendered rate is per month and shall include full compensation for all labour and equipment required for removing the material from channels irrespective of the depth of silt and debris and for loading, off-loading and spreading when material removed is intended for spoiling at approved spoil sites.

The tendered rates shall also include for transporting the excavated material to approved spoil sites in excess of the free haul distance.

Where material is disposed of adjacent to the channels, the tendered rate shall include full compensation for removing the material from the channels, irrespective of the depth of silt and debris, spoiling and spreading the material adjacent to the channel where it cannot be washed back into the channel.

SERIES M2000 : DRAINAGE MAINTENANCE

SECTION M2600 : CLEANING AND MAINTENANCE OF EXISTING EARTH CHANNELS

CONTENTS

M2601 SCOPE
M2602 EXECUTION OF WORK
M2603 ACCEPTANCE CRITERIA
M2604 MEASUREMENT AND PAYMENT

M2601 SCOPE

This section covers the work involved in cleaning of all earth drains and channels, repairs to damaged earth drains and channels as well as construction and repairs of banks and dykes.

M2602 EXECUTION OF WORK

(a) Drains

Earth side drains and channels shall be cleaned of all debris, silt and vegetation when specified in the Project Specifications or when instructed by the Employer's Agent.

Silt and debris excavated from the drains shall be deposited and spread neatly in close proximity of the drains where it will not wash back. Materials removed from drains shall not be deposited against cut and fill slopes.

Scoured and eroded sections of drains shall be backfilled with suitable material obtained from the side of the road or from suitable sources indicated by the Employer's Agent. The backfill material shall be compacted at the optimum uniform moisture content in layers not exceeding 100mm after compaction. The material shall be compacted to the density at which the penetration as measured by a DCP does not exceed 10mm per blow.

If in the opinion of the Employer's Agent drains require protective covering against scouring and erosion, such work shall be executed in accordance with the relevant section in this specification.

(b) Construction and repair of banks and dykes

Materials for the construction and repair of banks and dykes shall be an approved soil or gravel obtained from sources approved by the Employer's Agent. It shall be positioned in such a way that water will flow on the natural ground and against the bank.

Banks and dykes shall be properly compacted in layers not exceeding 150mm in thickness. If so approved by the Employer's Agent, mitre banks may also be constructed of hand-packed stone, provided that the interstices are filled with an approved cohesive soil.

M2603 ACCEPTANCE CRITERIA

Drainage channels shall be clear of any obstructions and no scouring, erosion or ponding evident.

Existing batter slopes and invert grades of drains shall be maintained.

M2604 MEASUREMENT AND PAYMENT

M2600 CLEANING AND MAINTENANCE OF EXISTING EARTH CHANNELS

Item	Unit
M260.01 Cleaning earth drains and channels	cubic metre (m ³)

The unit of measurement shall be the cubic metre of material cleaned out of the drain.

The tendered rate shall include full compensation for all labour and equipment required for removing the obstructions from drains, irrespective of depth of silt and debris and disposal of the excavated material as described.

Item	Unit
M260.02 Repairing of earth drains and channels	cubic metre (m ³)

The unit of measurement shall be the cubic metre of compacted material calculated from the dimensions measured in place.

The tendered rate shall include full compensation for trimming the eroded area to firm surrounding material, for procuring, placing and compacting the backfill material within a free haul of 1,0km.

Item	Unit
M260.03 Banks and dykes	cubic metre (m ³)

The unit of measurement shall be cubic metre of material in place in banks or dykes, calculated in accordance with authorised dimensions.

The tendered rate shall include full compensation for procuring, furnishing, placing, watering, compacting, shaping and trimming of material in the banks and dykes and a free-haul of 1km.

Item	Unit
M260.04 Overhaul of material in excess of the cubic metre kilometre free-haul distance of 1,0km .	(m ³ -km)

The unit of measurement shall be the cubic metre material hauled in excess of 1,0km. For imported material the net volume material compacted in place, multiplied by the average overhaul distance in excess of 1,0km and in the case for material to spoil, the volume of material measured loose in the truck multiplied by the average overhaul distance in excess of 1,0km.

The tendered rate shall include full compensation for hauling the material the distance from the designated source in excess of 1,0km

SERIES M2000 : DRAINAGE MAINTENANCE

SECTION M2700 : EDGE BUILD-UP REMOVAL

CONTENTS

M2701 SCOPE
M2702 EXECUTION OF WORK
M2703 ACCEPTANCE CRITERIA
M2704 INSPECTION OF EDGE BUILD-UPS FOR PAYMENT
M2705 MEASUREMENT AND PAYMENT

M2701 SCOPE

This section covers the work necessary for the removal of shoulder edge build-ups.

M2702 EXECUTION OF WORK

Material that has formed on edges of shoulders, including silt and grass growing on the road surface, restricting the free flow of water off the pavement, concentrating the water or presenting a potential hazard to traffic shall be removed. Material removed shall either be loaded and transported to designated spoil sites or disposed of adjacent to the road on the lower side of the road within the road reserve as approved by the Employer's Agent.

Where the material is spoiled adjacent to the road the Contractor shall ensure that the material is spread neatly and well clear of the road where it cannot wash back.

M2703 ACCEPTANCE CRITERIA

All material higher than the road surface which restricts the free flow of water off the pavement must be removed not allowing a cumulative length of more than 10m of edge build-up in any 1km length of road inspected. Material resulting from the removal of edge build-ups shall be removed completely.

M2704 INSPECTION OF EDGE BUILD-UP FOR PAYMENT

Inspection for edge build-up will be based on the following:

- Inspection of the edge build-ups will be monthly.
- The road will be broken up in 1km sections for inspection.
- The total length of road shall be divided by 20 to determine the number of sections to be inspected. A maximum number of 10 sections and a minimum of 4 shall be inspected and the positions will be chosen randomly. (The same sections of road will apply for section M2400 & M2500).
- If any section does not comply with the acceptance criteria, that section fails.
- The Contractor will be penalised by the number of failed sections multiplied by the penalty amount as specified in the Project Specification.

M2705 MEASUREMENT AND PAYMENT

Item	Unit
M270.01 Removal of edge build-ups	month

The monthly rate shall include full compensation for all overheads, labour, tools, equipment, loading, transporting to approved spoil areas, off-loading and spreading the material for the execution of the work.

SERIES M3000 : ROADSIDE MAINTENANCE

SECTION M3200 : COLLECTION AND REMOVAL OF DEBRIS AND LITTER

CONTENTS

M3201 SCOPE
M3202 EXECUTION OF WORK
M3203 ACCEPTANCE CRITERIA
M3204 MEASUREMENT AND PAYMENT

M3201 SCOPE

This section covers the work involved in collecting and removing of all foreign articles, debris, litter, posters and illegal signs of size less than 0,5m² from the road reserve, roadside stopping places, lay-byes and toll plazas as well as emptying of rubbish bins at all these areas.

M3202 EXECUTION OF WORK

(a) Initial cleaning of the road reserve

The Contractor shall, within the first four (4) weeks of the contract period, clean the road reserve 100% of all foreign articles which, inter alia, shall include:

- Litter
- Branches
- All stones larger than 75mm
- Building and garden rubble
- Tyres and stripped tyre treads
- Posters
- Old and new posters glued to concrete structures
- Illegal signs less than 0,5m²

- Graffiti on concrete structures
- Accident debris

The road reserve shall be cleaned from fence to fence, including interchanges, rest areas, laybys, toll plazas, side drains, all drainage grids, bridge drainage ports and scuppers and dustbins.

(b) General cleaning of the road reserve

The Contractor shall be responsible for keeping the road reserve clear of all foreign articles which, inter alia, shall include:

- Litter
- Branches
- Stones larger than 75mm but smaller than 300mm
- Tyres and stripped tyre treads
- Posters
- Illegal signs less than 0,5m²

- Accident debris

(c) Dumping sites

All material cleared from the road reserve shall be disposed of at approved dumping sites or as instructed by the Employer's Agent. The payment of fees and charges associated with the dumping sites shall be the responsibility of the Contractor.

The location of dumping sites shall be the responsibility of the Contractor. Written approval from the landowners or local authorities on whose property the dumping occurs will be required. No dumping sites will be permitted within the road reserve area.

(d) Removal of litter and debris

Unless otherwise specified by the Employer's Agent, the frequency for completing full width passes of the road and road reserve for collection of debris and litter, shall be as follows:

Urban roads: Once per week

Peri urban roads: Twice per month

Rural roads: Once per month

It shall, however, be at the discretion of the Employer's Agent to adapt the frequency of each road or section of road requiring litter collection and payment will be adjusted proportionately.

The Contractor shall inspect and remove all foreign articles, debris, rubbish and litter from the following areas at least once a week:

- Road pavement
- Lay-byes
- Toll plazas
- Down chutes
- Side drains

- All drainage grids
- Bridge drainage ports and scuppers
- Bridge expansion joints.

This shall also include the emptying of rubbish bins and cleaning of all containers and washing of benches and tables.

The Employer's Agent may instruct additional clearing of the reserve and/or lay-byes, toll plazas and other areas as required.

The Contractor shall provide sufficient plastic bags and the necessary equipment such as sharp pointed steel rods for picking up plastic bags and paper items. The Contractor must ensure that all bottles, tins, *inter alia* hidden by the grass and shrubs, are removed. Work shall be undertaken progressively along the road reserve.

Litter, *inter alia* shall be collected on one side of the road in one day before crossing to the opposite side to reduce the number of crossings over the road.

The rubbish bag collection vehicle shall travel off the surfaced width of the road as far as possible and the bag collection operation shall be organised in such a way that filled bags left on the side of the road do not have to be carried across the road to the vehicle. Full bags shall not be left on the side of the road overnight. No dumping sites will be permitted within the reserve area and the Contractor shall be responsible for removing the filled bags to the nearest approved dumping site. The Contractor will be penalised as specified in the Project Specification if he does not comply with the abovementioned.

(e) Cleaning of the SOS emergency call boxes

All the SOS emergency call boxes are to be properly cleaned once every two months or as instructed by the Employer's Agent, using a suitable cleaning agent. At the same time all the call boxes are to be tested and faulty ones are to be reported immediately. The necessary precautionary measures are to be taken to ensure that moisture does not damage the electronic circuits.

(f) Other requirements

At resting areas, lay-byes and toll plazas, damaged containers, tables and benches shall be replaced in accordance with the specifications and drawings and when instructed by the Employer's Agent.

M3203 ACCEPTANCE CRITERIA

The road reserve shall be inspected after clearing operation and shall be completely cleared of all debris and litter.

The collected litter and debris shall not be dumped, *inter alia* over banks, into streams and manholes, but only at an approved location, arranged beforehand with the Employer's Agent.

The stopping place areas shall be left clean and tidy with all containers cleared and benches and tables cleaned.

M3204 MEASUREMENT AND PAYMENT

The tendered lump sum shall include full compensation for all labour, equipment, tools and transport necessary for the cleaning of the road reserve as specified.

M3200 COLLECTION AND REMOVAL OF DEBRIS AND LITTER

Item	Unit
M320.01 Clearing of the road reserve	
(a) Urban roads (State section and km distance incl. interchanges)	month
(b) Peri urban roads (State section and km distance incl. interchanges)	month
(c) Rural roads (State section and km distance incl. interchanges)	month

The tendered rate per month shall include full compensation for all labour, tools equipment, and transport necessary for the collection and disposal of foreign articles as specified in this section. The tendered rate also includes the clearing of road pavement, rest areas, lay-byes, side drains, all drainage grids, bridge drainage ports

and scuppers and rubbish bins as specified. The tendered rate shall also include the removal of rubbish bags from the toll plazas.

Item	Unit
M320.02 Additional clearing of	
(a) Lay-byes	number (No)
(b) Toll plazas	number (No)
(c) Interchanges	number (No)
(d) (Other as specified)	number (No)

The unit of measurement for additional clearing at lay-byes, interchanges and other areas as specified is the number of such areas cleared on the instruction of the Employer's Agent in addition to the Contractor's obligations under payment Clause M320.01.

Item	Unit
M320.03 Cleaning of the SOS emergency call boxes	number (No)

The unit of measurement for cleaning the SOS emergency call boxes shall be the number of units cleaned. Each time the "yellow infrastructure" of the call box is cleaned it will be measured for payment.

The tendered rate for the cleaning of the call boxes shall include full compensation for all work necessary for the proper cleaning of the yellow infrastructure and for reporting on the functioning of each call box.

SERIES M3000 : ROADSIDE MAINTENANCE

SECTION M3300 : SHOULDER REPAIRS

CONTENTS

- M3301 SCOPE
- M3302 EXECUTION OF WORK
- M3303 ACCEPTANCE CRITERIA
- M3304 MATERIALS
- M3305 MEASUREMENT AND PAYMENT

M3301 SCOPE

This section covers the work necessary for reinstating the gravel shoulders of surfaced roads or gravel roads where specified.

M3302 EXECUTION OF WORK

(a) Reinstatement of gravel shoulders

(i) Construction

Shoulder reinstatement shall be carried out where the gravel shoulder is 50mm or more lower than the surfaced edge of the road and at busbays and stopping places where a drop off of more than 50mm exists or where the slope of a gravel shoulder must be reinstated to 3% or where directed by the Employer's Agent.

Reconstruction of gravel shoulders consists of the following methods of placing and compaction:

1. Ripping, watering, placing and compacting of in situ shoulder material with or without adding extra material from a borrow pit. In the event of extra material having to be added, an extra over payment item is allowed in the Schedule of Quantities as well as for stabilising in situ or imported material (for tendering purpose the nominal rate of application cement shall be 60kg per cubic metre of stabilised material).
2. Construction of full depth gravel shoulder with material imported from borrow or shavings originating from milling out existing asphalt layers.

The shoulders and other areas shall be reinstated to the same level as the existing surfaced edge and with a minimum slope of 3% to shed water away from the road. Reinstatement shall be constructed at least to the same crossfall as the road. At busbays and stopping places the shoulders shall be built up with a maximum width of

2.0m from the edge surfacing. No additional payment shall be made for the reconstruction of gravel shoulders to restricted widths and lengths.

(ii) Compaction

The reinstated gravel shoulder shall be compacted to 93% modified AASHTO density.

(b) Blading

When it is specified or instructed by the Employer's Agent that the layer shall be tested with a Dynamic Cone Penetrometer (DCP) the average penetration recorded after 5 blows shall not exceed 50mm.

Material shall not be compacted in layers exceeding a thickness of 150mm, measured in the loose.

The Employer's Agent may order the blading of existing gravel shoulders using a motorgrader.

The purpose of blading shall be to improve the condition and shape of existing shoulders without adding extra material from a borrow pit. Prior to the blading of shoulders, the in situ material shall be watered at a nominal rate of 5 litres per m² and allowed to properly infiltrate the layer until no free water is ponding on the surface. The bladed shoulder material shall be compacted with a pneumatic tyre roller of 27 ton mass for at least two passes.

M3303 ACCEPTANCE CRITERIA

Any surplus material resulting from the shoulder reinstatement work shall be removed completely and transported to spoil. M3304 MATERIALS

The material to be used for reconstruction of the gravel shoulders shall be a uniform material approved by the Employer's Agent, obtained from commercial sources identified by the Contractor. Gravel shall comply with a G7 quality as defined in TRH14. Only gravel material from soft excavation shall be utilised as shoulder material. Shavings originating from the milling out of existing asphalt surfacing layers may also be used to reconstruct eroded shoulders.

Generally the maximum size of the larger aggregates in the layer shall not exceed 30mm after compaction and the PI of the material before compaction shall not be less than 6 or exceed 12.

M3305 MEASUREMENT AND PAYMENT

M3300 SHOULDER REPAIRS

Item	Unit
M330.01 Reinstating gravel shoulders	
(a) Ripping, watering, mixing, placing and compacting existing shoulders to 93% of modified AASHTO density	cubic metre (m ³)
(b) Extra over sub-item M330.01 (a) for adding extra material	cubic metre (m ³)
(c) Extra over for sub-item M330.01 (a) for stabilising material	cubic metre (m ³)
(d) Blading	kilometre (km)
(e) Cutting of mitre drains	metre (m)

The unit of measurement for sub-item M330.01 (a) shall be the cubic metre of material to be reworked for the reinstatement of gravel shoulders.

The tendered rate shall include full compensation for ripping the existing shoulder material, breaking down, watering, mixing of the material including any extra material added, compacting

the material, including removal of 5% by volume of oversize material and transporting it over a distance of 1,0km.

The unit of measurement for sub-item M330.01 (b) shall be the cubic metre of material added to the existing gravel shoulder to make up any shortfall of material for reconstruction of shoulders. The quantity of extra material added shall be taken as 70% of the volume of hauling trucks.

The tendered rate shall include full compensation for procuring the material from borrow pits, placing and spreading the material over the existing shoulders including transporting the material within a free-haul distance of 1,0km and removal of 5% of volume of oversize material and transporting it over a free-haul distance of 1,0km.

The unit of measurement for sub-item M330.01(c) shall be cubic metre of material stabilized including the stabilising agent if required by the Employer's Agent at the required rate.

The tendered rates shall include full compensation for procuring materials as specified, labour, transport and for adding and mixing cement to in situ or imported material as required by the Employer's Agent.

The unit of measurement of sub-item M330.01 (d) shall be the distance bladed over the full width of the shoulder measured in kilometres along the centre line of the road.

The tendered rate shall include full compensation for the watering, blading and compacting of existing gravel shoulders as specified and to the number of passes as directed by the Employer's Agent.

The tendered rate shall also include for the neat trimming and removal of gravel material spilt onto the existing road surfacing during blading operations.

The unit of measure for sub-item M330.01(e) shall be a metre of drain cut and excavated as specified.

The tendered rate for cutting the mitre drain shall include full compensation for cutting the mitre drain in accordance with instructions, excavating the material to specified depth, removing all excavated and loose material to the side and compacting the material. The tendered rate shall also include full compensation for all transport, handling, labour, material, compacting necessary for completing all the work in accordance with the specifications, and also for work in restricted areas.

Item	Unit
M330.02 Overhaul on material in excess of the free-haul distance of 1,0km.	cubic metre kilometre (m ³ -km)

The unit of measurement shall be the cubic metre of material, hauled in excess of the 1,0km free-haul distance, multiplied by the average overhaul distance in excess of 1,0km free-haul.

The tendered rate shall include full compensation for hauling material in excess of the free-haul distance for importing material during shoulder reinstatement or for hauling and material removed during removal of edge build-ups in excess of the free-haul distance.

SERIES M4000 : ROAD TRAFFIC SIGNS AND ROADSIDE FURNITURE

SECTION M4100 : ERECTION AND REPAIR OF PERMANENT ROAD TRAFFIC SIGNS

CONTENTS

- M4101 SCOPE
- M4102 STORAGE AND HANDLING
- M4103 EXECUTION OF THE WORK
- M4104 MATERIALS
- M4105 PROTECTION AND MAINTENANCE
- M4106 DISMANTLING, STORING AND RE-ERECTING EXISTING ROAD SIGNS
- M4107 MEASUREMENT AND PAYMENT

M4101 SCOPE

This section covers the erection of permanent road traffic signs. It includes the repair and replacement of faded, damaged or not clearly visible existing signboards and reference marker boards.

Specifications relating to manufacturing of road signs are excluded, as relevant specifications regarding manufacturing will be issued to a nominated Subcontractor who shall be a recognised manufacturer of road signs.

The signs shall be of the standard regulatory, guidance, warning and information signs and shall be fabricated in accordance with the latest South African Road Traffic Signs Manual except where otherwise specified, indicated on drawings or directed by the Employer's Agent.

The erection and placement of any signs, whether temporary or permanent, shall be in accordance with Chapter 13 of Volume 2 of the South African Road Traffic Signs Manual.

M4102 STORAGE AND HANDLING

All road signs or parts of road signs shall be so transported and so handled and so stored in a weatherproof storeroom as to prevent any damage and deformation.

Signboards shall be stored on blocks in the vertical position so that the signs are not in contact with the ground. There shall be sufficient space between the finished road signboards to permit free air circulation and moisture evaporation. Contact of road signboards with treated timber and diesel, or storage where road sign boards come into contact with dirt or water will not be permitted.

When required, existing or newly erected road signs shall be fully or partially covered with burlap or other approved adequately ventilated material to obscure destinations that are temporarily inapplicable or irrelevant. The covers shall be neatly applied and firmly fixed in position so that they will be able to withstand strong gusts of wind or eddies caused by passing traffic. The fixing shall be done in a way that will not cause any damage to the road sign face.

M4103 EXECUTION OF THE WORK

(a) Position

Road signs shall be erected in the positions shown on the drawings or indicated by the Employer's Agent.

(b) Excavation and backfilling

Excavations for the erection of road signs shall be made according to the dimensions shown on the drawings. Where the excavations are to be backfilled with soil, a 1:12 cement/soil mixture shall be made if so required by the Employer's Agent. The soil or soil-cement mixture shall then be placed at optimum moisture content in 100mm thick layers in the excavation and shall be compacted to a minimum of 90% of modified AASHTO density.

Where posts or structures are to be fixed in concrete, or where concrete footings are to be cast, the concrete, formwork and reinforcement shall comply with the relevant requirements. The holes shall be completely filled with concrete up to the level shown on the drawings or indicated by the Employer's Agent. The upper surface of the concrete shall be neatly finished with sufficient fall to ensure proper drainage.

This Subclause shall apply to ground-mounted signs only. Excavating and backfilling for the foundations of overhead steel structures are specified and regarded as specialised structural work.

Excavation in rock shall be paid for under item M410.06.

When material from the excavations is not suitable for backfilling or for the preparation of soilcrete, suitable material shall be obtained as instructed by the Employer's Agent.

(c) Erection

Road signboards must be inspected by the Employer's Agent and approved in writing before the boards are taken from the campsite to the erection site. The Contractor shall notify the Employer's Agent at least one (1) week before the said inspections are required.

Road signs shall be erected strictly in accordance with the details and instructions on the drawings and as directed by the Employer's Agent.

During erection the structural steelwork shall be firmly bolted and protected to prevent buckling or damage from being caused during erection, or by the equipment used for erection.

Posts to which road signs are to be fixed shall be vertical and the undersides of road signs shall be horizontal after having been erected.

Where timber posts are used for erecting the signs, all holes drilled in the timber shall be re-treated with the approved preservative. A road sign identification number (as indicated on the layout drawing) and a code III-MM-YY indicating the initials of the manufacturer, the month and the year of manufacture of the sign. The identification number and code shall be provided on the reverse side of the road signboard in 50mm high letters and numbers for overhead signs and 25mm for ground mounted signs on the side closest to the road shoulder as directed by the Employer's Agent.

Any sign damaged during transit to the erection site or during the erection process shall be replaced or repaired to the satisfaction of the Employer's Agent at no extra cost to the Employer.

(d) Field welding

All welding done during erection shall comply with the requirements for welding during manufacture.

(e) On-site painting

All painting done after the road signs have been erected shall comply with the requirements for painting during manufacture.

The Contractor, at his own cost, shall repair all places where the paintwork has been damaged during erection to the satisfaction of the Employer's Agent.

(f) Time of erection

Road signs shall be erected in the time specified below for each type of sign.

Time for completion is defined as that period from the date on which an instruction is received by the Contractor from the Employer's Agent, to the date of full completion.

<u>Type of sign</u>	<u>Time for completion</u>
R – Series	2 days
W – Series	2 days
G – Series	4 days after date of delivery
Information signs	4 days after date of delivery

(g) Penalty for late erection

The penalty per offence as specified in the Project Specifications shall apply if the signs are not erected in the specified time period, or as instructed by the Employer's Agent in writing from time to time.

(h) Attachment of overlays

The type of the overlay to be used will be specified by the Employer's Agent and will consist either of 1mm thick Chromadek plate, pop-riveted onto the existing sign plate, or System 5 overlay or similar approved. Before the application of the overlay to any structure, the existing signboard shall be thoroughly cleaned.

(i) Repair of signs

The Employer's Agent may require that certain existing signs be dismantled for repair work or storage and later re-erected. The signs shall be repainted or repaired, by replacing the 200mm profiles or straightening the sheet metal, in accordance with the methods and requirements specified during the manufacturing process. New materials shall be used for part or all of the supporting structure. This work shall be done with as little damage as possible to the signs.

(j) General

All destinations and route numbers shown on the drawings shall be subject to amendment and confirmation, and the details shall be obtained from the Employer's Agent before any particular signs may be erected. Such particulars may be available only at a late stage, for which the Contractor shall make allowance in his programme.

M4104 MATERIALS

(a) Timber posts for road sign supports

Timber posts for road sign supports shall conform to the requirements of SABS 754, shall be equal to or better than strength group B timber posts and shall be stamped with the SABS mark. The exposed surface of the cut shall be given two coats of creosote. Any holes drilled in the timber posts after treatment with creosote shall be re-treated.

(b) Corrosion-protection tape

Corrosion-protection tape used between aluminium and steel shall be black PVC tape not less than 0,25mm in thickness, shall be resistant to ultra-violet rays, and shall have an adhesive backing. The breaking strength of the material shall not be less than 3,5kN/m.

M4105 PROTECTION AND MAINTENANCE

The Contractor shall protect the completed road signs against damage until the Employer has finally accepted them, and the Contractor shall maintain the road signs until the Taking Over Certificate has been issued.

Damage or defects caused by negligence or faulty workmanship shall be rectified by the Contractor, at his own cost, to the satisfaction of the Employer's Agent.

The Contractor shall, within two weeks after the commencement date of the Contract, submit to the Employer's Agent a list of all road signs (including posts) which have been damaged due to veld fires. The signs, which have been identified and approved, will be replaced and paid under this section. The Contractor shall control all vegetation growth around signs in such a way necessary to prevent any damage to the signs due to veld fires. The Contractor will replace all signs damaged due to veld fires at the Contractor's own cost.

M4106 DISMANTLING, STORING AND RE-ERECTING EXISTING ROAD SIGNS

Where ordered by the Employer's Agent, the Contractor shall dismantle existing road signs, store them, and re-erect them at new positions indicated. This work shall be done with as little damage as possible to the signs.

The method for dismantling the existing signs and transporting and storing the signs shall be subject to the Employer's Agent's approval. No additional payment shall be made for any equipment or handling methods necessary to prevent damage to existing signs which are suitable for re-use, as ordered by the Employer's Agent.

Where required by the Employer's Agent, the signs shall be repainted or repaired and new materials shall be used for part or all of the supporting structure.

M4107 MEASUREMENT AND PAYMENT

M4100 ERECTION AND REPAIR OF PERMANENT ROAD TRAFFIC SIGNS

Item	Unit
M410.01 Erection or re-erection of road signboards	
(a) Area not exceeding 2m ²	square metre (m ²)
(b) Area exceeding 2m ² but not 10m ²	square metre (m ²)
(c) Area exceeding 10m ²	square metre (m ²)
(d) Overhead road signboards	square metre (m ²)

The unit of measurement shall be the square metre of completed road sign erected as required in the Project Specification, instructions or drawings issued by the Employer's Agent.

The tendered rates shall include full compensation for attaching the road signboard to a road sign support structure, or to an overhead road sign support structure or to an overbridge and for all equipment, labour, supervision, nuts, bolts, transport, handling, *inter alia* necessary for the installation of the road signboard.

Item	Unit
M410.02 Road sign supports (overhead road sign structures excluded)	
(a) Steel tubing (diameter and wall thickness indicated)	metre (m)
(b) Timber (diameter and type indicated)	metre (m)

The unit of measurement for sub-item M410.02 (a) for erecting supporting structures manufactured from steel tubing shall be the metre of steel tubing used. Bolts and other accessories shall not be measured separately.

The unit of measurement for sub-item M410.02 (b) for erecting timber supporting structures shall be the metre of each diameter post used. Bolts and other accessories shall not be measured. Only the actual length of completed posts will be measured. Cut-off sections will not be measured.

The tendered rates shall include full compensation for erecting the road sign supports, including all bolts, screws, rivets, welding and accessories, together with the painting and galvanising required and the provision and treatment of breakaway holes in timber supports.

The tendered rates shall also include full compensation for tying up, clearing, trimming, disposing of material at approved dumping sites provided by the Contractor, and finishing the area around each sign footing.

Overhead road sign supporting structures shall not be measured and paid for under this item, but shall be considered as specialised structural work.

Item	Unit
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M410.03 Reference marker boards (type indicated) number (No)

The unit of measurement shall be the number of reference marker boards including posts supplied and erected in accordance with the drawings.

The tendered rate shall include full compensation for all the labour, excavation, backfilling with soil or concrete, inter alia, as may be necessary for completing the work in accordance with the details shown on the drawings.

Item	Unit
M410.04 Excavation and backfilling for road sign supports (not applicable to reference marker board posts)	cubic metre (m)

The unit of measurement shall be the cubic metre of excavation measured in place according to the neat dimensions of the footings or excavations as shown on the drawings or directed by the Employer's Agent. In the case of timber posts not in concrete, the plan area of the excavated hole shall be taken as 0,15m², irrespective of the actual size of the excavated hole.

The tendered rate shall be in full compensation for excavating, backfilling and compacting the backfill material, for the disposal of all surplus excavated material, and for providing the backfill material.

Item	Unit
M410.05 Extra over item M410.04 for cement-treated soil backfill	cubic metre (m ³)

The tendered rate shall include full compensation for the additional cost of providing and mixing in cement.

Item	Unit
M410.06 Extra over item M410.04 for rock excavation	cubic metre (m ³)

The tendered rate shall include full compensation for the additional cost of excavating in rock.

Item	Unit
M410.07 Dismantling, storing and re-erecting road signs with a surface area of:	
(a) Up to 2m ²	number (No)
(b) Exceeding 2m ² but not 10m ²	number (No)
(c) Exceeding 10m ²	number (No)

The unit of measurement shall be the number of signs dismantled, stored and re-erected in each size group.

The tendered rates shall include full compensation for dismantling and storing the road signs and supporting structures, transporting the material to a new location, re-erecting the road signs, and restoring the location where they were dismantled.

Payment for excavations, and the new material and concrete required for re-erecting the road signs shall be made under the appropriate item, and any repairs and painting which may be necessary, shall be paid for under "repair of road sign faces". No separate payment shall be made for new bolts and nuts required for such re-erection, the cost of, which shall be included in the rates tendered above.

Item	Unit
M410.08 Dismantling and storing road signs with a surface area of:	
(a) Up to 2m ²	number (No)
(b) Exceeding 2m ² but not 10m ²	number (No)
(c) Exceeding 10m ²	number (No)

The unit of measurement shall be the number in each size group dismantled and stored on instruction of the Employer's Agent.

The tendered rates shall include full compensation for carefully dismantling and disassembling the road signs, loading, transporting, off-loading and carefully stacking all the materials as required by the Employer's Agent. It shall also include compensation for restoring the site where the road signs have been dismantled.

The tendered rates shall also include full compensation for demolishing the concrete footings of existing signs to at least 200mm 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 200mm below the adjacent ground level.

Item	Unit
M410.09 Gravel drainage layer below road sign footings	cubic metre (m ³)

The unit of measurement is the cubic metre of compacted gravel placed below road sign footings in accordance with the details on the drawings. The quantity will be calculated from the authorised dimensions, and gravel placed outside the authorised dimensions will not be measured for payment.

The tendered rate shall include full compensation for procuring, furnishing and placing the gravel.

Item	Unit
M410.10 Hazard plates (size indicated)	number (No)

The unit of measurement is the number of each size of hazard plate including posts supplied and erected complete in accordance with the details on the drawings.

The tendered rate shall include full compensation for excavating, disposing of excavated material (including overhaul), erecting and for placing and compacting the soilcrete backfilling.

Item	Unit
M410.11 Repair of road sign faces	square metre (m ²)

The unit of measurement shall be the square metre of sign face repaired on the instruction of the Employer's Agent. Only the portion of the sign face actually repaired shall be measured for payment.

The tendered rate shall include full compensation for procuring and furnishing all the necessary material, labour and equipment and for repairing as specified.

Item	Unit
M410.12 Concrete in road sign footings (class indicated)	cubic metre (m ³)

The unit of measurement shall be the cubic metre of concrete in place.

The tendered rate shall include full compensation for procuring and furnishing all materials, mixing, transporting, placing and compaction of the concrete.

Item	Unit
M410.13 Attachment of overlays to existing road signs (type specified)	square metre (m ²)

The unit of measurement shall be the square metre of overlays attached to the existing signboard.

The tendered rate shall include full compensation for labour, transport and materials necessary for attaching the overlay to existing road signs.

Item	Unit
M410.14 Removal of road sign supports	number (No)

The unit of measurement shall be the number of road sign supports removed.

The tendered rate shall include full compensation for removing road sign supports on the instruction of the Employer's Agent, demolishing of concrete footings to at least 200mm below adjacent ground level and disposing of resulting debris.

Item	Unit
M410.15 Procurement of road signboards	
(a) Purchase of manufactured road signboards	Provisional sum (Prov Sum)
(b) The Contractor's overhead charges and percentage profit in respect of sub-item M410.15(a).	(%)

Measurement and payment shall be in accordance with the provisions of the General Conditions of Contract for Construction Works, 2015 3rd edition. The tendered rate for M410.15 (b) shall include full compensation for all overheads, transport, supervision, profit and other costs incurred in the purchase of road sign material.

Item	Unit
M410.16 Erection and repairs of gantry structures	
(a) Erection and repairs of gantry structures	Provisional sum (Prov Sum)
(b) The Contractor's overhead charges and percentage profit in respect of sub-item M410.16(a).	(%)

Measurement and payment shall be in accordance with the provisions of the General Conditions of Contract for Construction Works, 2015 3rd edition.

The tendered rate for item 410.16 (b) shall include all overheads, profit, transport, supervision and other costs incurred for appointing and utilising a selected specialist Subcontractor for erection and repairs of gantry structures.

SERIES M4000 : ROAD TRAFFIC SIGNS AND ROADSIDE FURNITURE

SECTION M4400 : GUARD-RAIL ERECTION AND MAINTENANCE

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M4401 SCOPE

This section covers the supplying and installation of new guard-rails, and the maintenance of existing guard-rails.

This section shall also include the removal, straightening, re-alignment, renovation and reerection of damaged guard-rails.

M4402 EXECUTION OF WORK

(a) Erection of new guard-rails

New guard-rails shall be erected at locations as directed by the Employer's Agent.

The holes for timber posts shall be of sufficient size to permit proper setting of the posts. At least 1,0m of a post shall be embedded in the ground.

The posts, spacer blocks and guard-rails shall be completely erected and set true to line and level so that the guard-rail will be at the required height above the level of the road shoulder.

Where jointed, the end of the guard-rail which overlaps on the side of the traffic shall point in the direction of the traffic movement. The guard-rail shall be suitably braced to prevent any movement, and all bolts shall be tightened prior to any holes being backfilled.

After the Employer's Agent has approved the guard-rails so erected, the holes shall be backfilled with an approved sandy soil. The material shall be mixed with the correct quantity of water to ensure that the mixture will be placed while at or near the optimum moisture content. The mixture shall then be placed and thoroughly rammed in layers not exceeding 100mm of compacted thickness.

The approach ends, where the guard-rail has to be bent down and anchored, and the trailing ends shall be constructed as shown on the drawings.

The edges and the centre of the guard-rails shall touch either the spacer block or the post where no spacer blocks are used. All splices of guard-rail shall be at posts and shall make contact over the entire area of the splice.

Guard-rail posts other than timber shall be erected and fixed as shown on the drawings or as instructed by the Employer's Agent.

Reflective plates shall be fixed in accordance with the details shown on the drawings. The reflective surface shall be arranged with the colours as shown on the drawings.

(b) Removing, renovating and re-erecting damaged guard-rails

The Employer's Agent shall approve removal, renovation and re-erection of guard-rails.

(i) Removing the guard-rails

All guard-rails, reflective plates and end units shall be carefully dug out and the holes shall be filled and compacted in 150mm layers. Items used for fixing, such as bolts, units and washers, together with the reflective plates, shall be placed into bags, after which all the material shall be transported to a store approved by the Employer's Agent and all stored in groups by type.

Where material is intended for re-use, it shall first be unpacked for inspection by the Employer's Agent for deciding which material will be suitable for re-use. Suitable material shall then be stored separately from material, which is unsuitable for re-use.

(ii) Renovated guard-rails

Units suitable for re-use shall be taken to the workshop for renovating if required.

Posts suitable for re-use shall be cleaned and treated with a timber preservative. Bolts, nuts and washers to be re-used shall be cleaned and all rust removed, and shall then be oiled.

The units shall be straightened by means of a hydraulically or electrically powered machine capable of straightening guard-rails to their original profile. If necessary, holes shall be redrilled to original positions. Rust shall be completely removed and minor indentations hammered out.

No additional payment will be made for renovating the guard-rails and timber posts. All costs for renovating the material must be included in the rate tendered under payment item M440.07.

(iii) Re-erection

The guard-rails shall be erected in the positions as indicated and all the removed material suitable for re-use and as much supplementary new material as may be necessary shall be used. Re-erection shall be as specified for new guard-rails, including fixing the retro-reflective plates.

(c) Re-alignment of existing guard-rails

The Employer's Agent may require that the horizontal and vertical alignments of existing guard-rail lines be improved.

Some of the soil around the guard-rail post shall be removed to loosen the posts prior to correcting the alignments. The raising of guard-rails to the required height is best done by using hydraulic jacks at the posts. The soil left in the post hole shall then be thoroughly rammed in underneath the end of the post to keep the post at the correct height above the shoulder. Before the jacks are removed the remainder of the backfilling shall be carried out as described for new guard-rails.

M4403 ACCEPTANCE CRITERIA

All guard-rail posts shall be rigid and vertical and the guard-rail shall be firmly fixed to the post.

The completed guard-rail shall have a neat appearance and shall not show any visible deviation from the required line and grade.

The guard-rails shall overlap in the direction of traffic and the endwings bolted firmly on top of the guard-rail.

M4404 MATERIALS

(a) Guard-rails

Guard-rails shall comply with the requirements of SABS 1350 and shall be supplied together with all bolts, nuts, washers and fixing materials required including the bolts for fixing the guard-rails to the posts. The length of the guardrail will be measured according to its effective length equal to 3,81m.

Galvanising of guard-rails, bolts, nuts and washers shall comply with SABS 763.

(b) Guard-rail posts

(i) Timber posts

Timber posts shall be supplied in lengths as shown on the drawings and shall comply with the requirements of SABS 457 and shall carry the SABS mark.

Posts shall be shaped and drilled as shown on the drawings and shall have a top diameter of not less than 150mm or more than 230mm. The posts shall not exhibit excessive cracking and posts which in the opinion of the Employer's Agent, exhibit a degree of cracking that would render them unfit for service during a much shorter than normal life shall not be used.

Timber posts and spacer blocks shall be treated in accordance with SABS requirements for timber preservation. New timber posts and spacer blocks shall be treated with a creosote preservative.

Posts shall not be sawn, drilled or shaped after treatment. Where, however, the cutting of posts is unavoidable the Employer's Agent may permit the required length to be cut off from the bottom of the post, provided that the exposed area is subsequently thoroughly treated with creosote.

(ii) Other guard-rail posts

Normally only timber posts shall be used for supporting the guard-rails but under certain circumstances other types of posts may be required. The type and size of other posts shall be as shown on drawings.

(c) Guard-rail reflectors

V-shaped reflective plates shall be manufactured from 1.5mm thick mild steel plate to the dimensions shown on the drawings. When supplied with the galvanized guard-rails, they shall also be galvanised and when supplied with painted guardrails,

they shall be finished in white baked enamel. The outer surface shall be coated with Employer's Agenting-grade retro-reflective material, which complies with the provisions of CKS 191 in the colours shown on the drawings. Holes for fixing shall be drilled before the reflective plates are galvanised or painted.

M4405 INSTALLATION AND REPAIRING OF WIRE ROPE SAFETY FENCE

Wire rope safety fence shall be erected at locations as directed by the Employer's Agent.

The erection of the wire rope safety fence shall be completely erected as shown on the drawings and set true to time and level so that the wire rope safety fence will be at the required height above the level of the road shoulder.

The wire rope safety fence must meet the requirement for road safety barriers set out in the European CEN Standards (Comité Européen de Normalisation).

The wire rope fence must fulfill the requirements of the impact tests as described in EN 1317, Road Restraint System with a containment level of N1.

M4406 MEASUREMENT AND PAYMENT

M4400 GUARD-RAIL ERECTION AND MAINTENANCE

Item	Unit
M440.01 Supply and erection of new galvanised guard-rails	metre (m)

The unit of measurement shall be the effective metre of guard-rail erected in position excluding curved guard-rails and end units.

The tendered rates shall include full compensation for furnishing all materials and labour and for galvanising and erecting the guard-rail complete with posts, spacer blocks, bolts, nuts, washers and reinforcing plates.

Item	Unit
M440.02 Supply and erection of new galvanised curved guard-rails factory bent to a radius of less than 45,0m	metre (m)

The unit of measurement shall be the effective metre of curved guard-rail erected in position and measured in place.

The tendered rates shall include full compensation for furnishing all materials and labour and for galvanising and erecting the guard-rail complete with posts, spacer blocks, bolts, nuts, washers and reinforcing plates.

Item	Unit
M440.03 Extra over for erection of guard-rail posts	
(a) Additional timber posts for payment item M440.01, M440.02	number (No)
(b) Backfilling guard-rail post with soilcrete	number (No)
(c) Backfilling guard-rail post with concrete	number (No)

The unit of measurement for subitem M440.03 (a) shall be the number of additional guard-rail posts erected in position and measured in place. The tendered rate shall include full compensation for furnishing and erecting guard-rail posts complete with spacer blocks, bolts, nuts, washers, and reinforcing plates.

The unit of measurement for subitem M440.03 (b) and (c) shall be the number of guard-rail posts backfilled with soilcrete or concrete. The tendered rate shall include full compensation for provision of soilcrete or concrete for backfilling to guard-rail posts as instructed by the Employer's Agent or as detailed on drawings.

Item	Unit
M440.04 End units	
(a) End wings	number (No)
(b) Terminal sections in accordance with the drawings where single guard-rail sections are used	number (No)
(c) Terminal sections in accordance with the drawings where double guard-rail sections are used	number (No)

The unit of measurement shall be the number of end units of each type erected.

The tendered rates shall include full compensation for all labour, constructional equipment and material required for installing the end units as shown on the drawings including posts, fittings and the bending of turned-down sections, excavations, concrete, backfilling and the removal of surplus backfilling.

Item	Unit
M440.05 Guard-rail reflectors	number (No)

The unit of measurement shall be the number of guard-rail reflectors installed.

The tendered rate shall include full compensation for supplying all materials and labour required for manufacturing, painting and fixing guard-rail reflectors as specified and as shown on the drawings.

Item	Unit
M440.06 Removal of damaged guard-rails and re-erection of guard-rails with new, recovered or renovated material	
(a) Guard-rails	metre (m)
(b) End wings	number (No)
(c) Terminal sections with single guard-rails	number (No)

- (d) Terminal sections with double guard-rails number (No)
- (e) Extra over for providing additional guard-rail posts number (No)

The unit of measurement for sub-item M440.06 (a) shall be the metre of effective length of guard-rails removed and re-erected including the post with spacer blocks, excavating, backfilling the post holes and removing any surplus excavated material.

The unit of measurement for sub-item M440.06 (b), (c) and (d) shall be the number of units removed and re-erected.

The tendered rate shall include full compensation for constructional equipment, labour and tools required to remove the items and re-erecting the guard-rails as specified with new, recovered or renovated material, including loading, transporting between any two points on the site and offloading

the material. The providing of new material shall be paid under item M440.08 and renovating material under M440.07.

The tendered rate shall also include for the loosening of bolts and the adjacent sections of guard-rails in order to adjust their position to accommodate the new or renovated sections of guard-rail.

The unit of measurement for subitem M440.06 (e) shall be the number of additional guard-rail posts erected in position and measured in place. The tendered rate shall include full compensation for furnishing and erecting guard-rail posts complete with spacer blocks, bolts, nuts, washers, and reinforcing plates.

M440.07 Providing of renovated guard-rail material

- (a) Guard-rails metre (m)

The unit of measurement for sub-item M440.07 (a) shall be the metre of guard-rail, provided complete with renovated or new post, spacer blocks, bolts, nuts, washers and reinforcing plates measured in accordance with the measurement of the loose guard-rails. The tendered rate shall include full compensation for renovating the material as specified.

The tendered rate shall include full compensation for the work as specified, including the loading, transporting to and from the workshops, off-loading and storing of the material and transporting the material back to site at position of re-erection.

Payment for renovated material will only be made after erection of the renovated material.

Item	Unit
M440.08 Providing of new material required for the re-erection of guard-rails	
(a) Guard-rails (galvanised)	metre (m)
(b) Curved guard-rails	metre (m)
(c) Timber post	number (No)
(d) Steel posts	number (No)
(e) Spacer blocks	number (No)
(f) Guard-rail reflectors	number (No)
(i) Type D1 (A)	number (No)
(ii) Type D1 (B)	number (No)
(g) End wings	number (No)
(h) Terminal sections with single guard-rails	number (No)
(i) Terminal sections with double guard-rails	number (No)

The unit of measurement for sub-item M440.08 (a) and (b) shall be the metre of guard-rail provided, complete with posts, spacer blocks, bolts, nuts, washers and reinforcing plates measured in accordance with the measurements of the loose guard-rail.

The unit of measurement for sub-item M440.08 (c), (d), (e), (f) and (g) shall be the number of additional new items provided, respectively.

The unit of measurement for sub-item M440.08 (h) and (i) shall be the number of new units provided complete with posts, spacer blocks, bolts, nuts, washers and reinforcing plates.

The tendered rates shall include full compensation for supplying all material as specified.

Item	Unit
M440.09 Drilling and blasting holes for guard-rail posts	number (No)

The unit of measurement shall be the number of holes drilled and blasted with explosives in hard material, which cannot be removed by auger.

The tendered rate shall include full compensation for all drilling, explosives, materials, labour and equipment and all incidentals to be incurred for making holes in hard material.

Item	Unit
M440.10 Reinstatement of concrete to guard-rail posts (Class indicated)	cubic metre (m ³)

The unit of measurement shall be the cubic metre of concrete placed in accordance with the authorised dimensions.

The tendered rate shall include full compensation for procuring and furnishing all materials, mixing, transporting, placing and compaction of the concrete.

Item	Unit
M440.11 Re-alignment of guard-rails	metre (m)

The unit of measurement shall be the metre of guard-rail re-aligned in position, if required, on the instruction of the Employer's Agent.

The tendered rate shall include full compensation for labour, tools, equipment, materials and overheads required for the alignment of guard-rails as specified.

Item	Unit
M440.12 Installation and repair of wire rope safety fence	
(a) Provisional sum Provisional sum (Prov sum)	Prov sum
(b) The Contractor's overhead charges and profit in respect of providing the service	percentage (%)

SERIES M4000 : ROAD TRAFFIC SIGNS AND ROADSIDE FURNITURE

SECTION M4600 : ROAD MARKINGS

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M4601 SCOPE

This section covers the permanent marking and maintenance of white or yellow painted lines or symbols on the road surface.

Road marking is regarded as specialist work and shall be undertaken by nominated Subcontractors with relevant experience.

M4602 MATERIALS

(a) Plant

(i) Road-marking paint

Road-marking paint shall comply with the requirements of SABS 731-1 for type 1, type 2 or type 4 paint. The no-pick-up time of road marking paint shall comply with the class 1 requirement in accordance with SABS 731-1.

The paint shall be delivered at the site in sealed containers bearing the name of the manufacturer, type of paint and marked in accordance with SABS 731-1.

The viscosity of the paint shall be such that it can be applied without being thinned down.

(ii) Retro-reflective road-marking paint

Retro-reflective road-marking paint shall comply with the requirements of CKS 192 and Subclause M4602 (a) (i).

(iii) Plastic road-marking material

Plastic road-marking material shall comply with the requirements of BS 3262.

(iv) Colour

The binder shall be an elasticised synthetic resin and the material shall be reflectorized by mixing 20% by mass Class A glass beads in accordance with BS 6088.

The colours to be used shall be bright white, yellow or red.

The colour of the yellow and red paint shall be as specified in SABS 731-1.

(v) The retro-reflective beads shall be glass beads that comply with the requirements for glass beads specified in CKS 192.

The beads shall be delivered to the site in sealed bags, marked with the name of the manufacturer, the batch number and an inspection seal of the SABS, confirming that the beads form part of a lot tested by the SABS and comply with the requirements of CKS 192. Alternatively, the Contractor shall at all times have a SABS certificate on the site, identifying the batches to which the inspection seals apply and certifying that they have been tested by the SABS, and comply with the requirements of CKS 192

M4603 WEATHER LIMITATIONS

Road-marking paint shall not be applied to a damp surface or at temperatures lower than 10°C, or when, in the opinion of the Employer's Agent, the wind strength is such that it may adversely affect the painting operations.

No road-marking paint may be applied when visibility is dangerously impeded by mist, smoke or smog.

M4604 MECHANICAL EQUIPMENT FOR PAINTING

The equipment shall consist of an apparatus for cleaning the surfaces, a mechanical road-painting machine and all additional hand-operated equipment necessary for completing the work. The mechanical road-marking machine shall be capable of painting at least three lines simultaneously and shall apply the paint to a uniform film thickness at the rates of application specified hereinafter. The machine shall be so designed that it will be capable of painting the road-markings everywhere to a uniform width with sides within the tolerances specified hereinafter, without the paint running, splashing or spattering. The machine shall further be capable of painting lines of different widths by adjusting the spray jets on the machine or by means of additional equipment attached to the machine. The road-marking machine shall be fitted with a device to guide the operator to the centre of the line to be painted. This device shall be used at all times of operation.

The machine shall be capable of spraying at a speed of not less than 5.0km/h, and shall be provided with clearly visible amber warning flashing lights, which shall always be in operation when the machine is on the road.

M4605 SURFACE PREPARATION

Road markings shall be applied to bituminous surfaces only after sufficient time has elapsed to ensure that damage will not be caused to the painted surface by volatiles evaporating from the seal. After completion of the seal, no less than 2 weeks or such longer period as may be directed by the Employer's Agent shall elapse before any road markings shall be applied. However, the Employer's Agent may, in certain cases, require road markings to be painted without waiting for the seal to harden, in which case it shall be done as soon as possible after the instruction has been given.

Before the paint is applied, the surface shall be clean and dry and completely free from any soil, grease, oil, acid or any other material which will be detrimental to the bond between the paint and the surface. The surface where the paint is to be applied shall be properly cleaned by means of watering, brooming or compressed air if required.

Where road markings are to be applied to a concrete pavement, all laitance and loose curing compound shall be removed.

M4606 SETTING OUT THE ROAD MARKINGS

The dimensions and positions of road markings shall be as shown on the drawings or as specified in the appropriate statutory provisions and the South African Road Traffic Signs Manual.

The lines, symbols, figures or marks shall be premarked by means of paint spots of the same colour as that of the final lines and marks. These paint spots shall be at such intervals as will ensure that the road markings can be accurately applied, and in no case shall they be more than 1.5m apart. Normally spots of approximately 10mm in diameter should be sufficient.

After spotting, the positions of the proposed road markings such as broken lines and the starting and finishing points of barrier lines shall be indicated on the road. These premarkings shall be approved by the Employer's Agent prior to any painting operations being commenced.

The position and outlines of special markings shall be produced on the finished road in chalk and shall be approved by the Employer's Agent before they are painted. Approved templates may be used on condition that the positioning of the marking is approved by the Employer's Agent before painting is commenced.

M4607 APPLYING THE PAINT

The figures, letters, signs, symbols, broken or unbroken lines or other marks shall be painted as shown on the drawings or as directed by the Employer's Agent.

Where the paint is applied by machine, it shall be applied in one layer. Before the roadmarking machine is used on the permanent works, the satisfactory operation of the machine shall be demonstrated on a suitable site, which is not part of the permanent works. Adjustments to the machine shall be followed by further testing. Only when the machine has been correctly adjusted and its use has been approved by the Employer's Agent after testing, may the machine be used on the permanent work. The operator shall be experienced in the use of the machine.

After the machine has been satisfactorily adjusted, the rate of application shall be checked and adjusted if necessary before application on a large scale is commenced.

Where two or three lines are required next to each other, the lines shall be applied simultaneously by the same machine. The paint shall be stirred before application in accordance with the manufacturer's instructions. Paint shall be applied without the addition of thinners.

Where, under special circumstances, painting is done by hand, it shall be applied in two layers, and the second layer shall not be applied before the first layer has dried out sufficiently. As most road-marking paint reacts with the bitumen surface of the road, the paint shall be applied with one stroke only of the brush or roller.

Ordinary road marking paint shall be applied at a rate not less than 0.42 litre per m² or as directed by the Employer's Agent and proprietary brand paints or plastic road marking materials shall be applied at the rate specified.

Unless otherwise prescribed by the Employer's Agent, the road marking shall be completed before a particular section of the road is opened to traffic. Each layer of paint shall be continuous over the entire area being painted.

M4608 APPLYING THE RETRO-REFLECTIVE BEADS

Where retro-reflective paint is required, the retro-reflective beads shall be applied by means of a suitable machine in one continuous operation, immediately after the paint has been applied. The rate of application of the

beads shall be at least 0.8kg per litre of paint or such other rate as may be directed by the Employer's Agent. Machines, which apply the beads by means of gravity only, shall not be used. The beads shall be sprayed onto the paint layer by means of a pressure sprayer.

Additional surface reflectorisation of plastic road markings shall be applied at the rate and by means of the methods specified.

M4609 TOLERANCES

Road markings shall be constructed to an accuracy within the tolerances given below:

(a) Width

The width of lines and other markings shall not be less than the specified width, nor shall it exceed the specified width by more than 10mm.

(b) Position

The position of lines, letters, figures, arrows and other markings shall not deviate from the true or existing position by more than 100mm in the longitudinal and 20mm in the transverse direction.

(c) Alignment of markings

The alignment of the edges of longitudinal lines shall not deviate from the true alignment by more than 10mm in 15m.

When an unbroken line and a broken line are painted alongside each other, the beginning and the end of the unbroken line shall coincide with the beginning of one broken line and the end of another broken line. When existing lines are painted, the new markings shall not deviate more than 100 mm in the longitudinal direction or 10mm in the transverse direction from the existing marking.

The alignment of the roadstuds shall not deviate from the true alignment by more than 10mm and shall be positioned so that the reflective faces are within 5 of a right angle to the centre line of the road.

(d) Broken lines

The length of segments of broken longitudinal lines shall not be shorter than the specified length or deviate by more than 150mm from the specified length.

M4610 GENERAL

In broken lines the length of segments and the gap between segments shall be as indicated on the drawings. If these lengths are altered by the Employer's Agent, the ratio of the lengths of the painted section to the length of the gap between painted sections shall remain the same.

Lines on curves, whether broken or unbroken, shall not consist of chords but shall follow the correct radius.

Where plastic road-marking material is used, the manufacturer shall produce an approved guarantee as specified in the Project Specifications.

Where indicated by the Employer's Agent, the Contractor shall remove existing painted markings from the existing surfaces by means of sand blasting or as ordered by the Employer's Agent. Suitable precautions shall be taken to avoid damage to nearby vehicles or other property during the sand blasting process. The use of black paint or chemical paint remover to obliterate existing markings will not be permitted, except where it is ordered by the Employer's Agent as a temporary measure.

M4611 FAULTY WORKMANSHIP OR MATERIALS

If any material which does not comply with the requirements is delivered to the site, or is used in the works, or if any work of an unacceptable quality is carried out, such material or work shall be removed, replaced or repaired as required by the Employer's Agent at the Contractor's own cost.

Rejected road markings and paint which has been splashed or dripped onto the pavement, kerbs, structures or other such surfaces, shall be removed by the Contractor, at his own cost, in an approved manner so that the markings or split paint will now show up at all.

The Contractor shall rectify in an acceptable manner and at own cost, all markings that do not comply with the specified requirements, without necessarily having to be told to do so by the Employer's Agent.

While work is in progress, tests shall be carried out on materials and/or the quality of work to ensure compliance with the specified requirements. The sampling methods are specified in SABS 731-1:1995 under the appropriate sampling and testing methods. The sampling methods described in TMH5 shall be followed where applicable.

The installation as well as the road studs shall be guaranteed for at least 12 months and the Contractor shall replace defects or losses, at his own cost. A maximum of 2% losses will be permitted save that if three and more successive studs are lost from the same line within the 12 month guarantee period they shall be replaced by the Contractor, at his own cost, within 1 month of the date of a written instruction from the Employer's Agent.

M4612 PROTECTION

After the paint has been applied, the road markings shall be protected against damage by traffic or other causes. The Contractor shall be responsible for erecting, placing and removing all warning boards, flags, cones, barricades and other protective measures which may be necessary in terms of any statutory provisions and/or as may be recommended in the South African Road Traffic Signs Manual Chapter 13.

Traffic cones shall not be smaller than 750mm in height and shall be placed on the road not further than 48m apart. Cones shall not be removed before the paint on the road has hardened to such an extent that it will not be damaged by traffic. All marks on the road caused by traffic driving over wet paint shall be removed by the Contractor at his own cost.

M4613 MEASUREMENT AND PAYMENT

M4600 ROAD MARKINGS

Item	Unit
M460.01 Road-marking paint:	
(a) White lines (broken or unbroken) (width of line indicated)	kilometre (km)
(b) Yellow lines (broken or unbroken) (width of line indicated)	kilometre (km)
(c) Red lines (broken or unbroken) (width of line indicated)	kilometre (km)
(d) White lettering and symbols	square metre (m ²)
(e) Yellow lettering and symbols	square metre (m ²)
(f) Transverse lines, painted island and arrestor bed markings (any colour)	square metre (m ²)
(g) Kerb markings (any colour)	square metre (m ²)
Item	Unit
M460.02 Retro-reflective road-marking paint:	
(a) White lines (broken or unbroken) (width of line indicated)	kilometre (km)
(b) Yellow lines (broken or unbroken) (width of line indicated)	kilometre (km)
(c) Red lines (broken or unbroken) (width of line indicated)	kilometre (km)
(d) White lettering and symbols	square metre (m ²)
(e) Yellow lettering and symbols	square metre (m ²)
(f) Transverse lines, painted island and arrestor bed markings (any colour)	square metre (m ²)

Item	Unit
M460.03 Hot-melt plastic road-marking material (particulars stated):	
(a) White lines (broken or unbroken) (width of line indicated)	kilometre (km)
(b) Yellow lines (broken or unbroken) (width of line indicated)	kilometre (km)
(c) Red lines (broken or unbroken) (width of line indicated)	kilometre (km)
(d) White lettering and symbols	square metre (m ²)
(e) Yellow lettering and symbols	square metre (m ²)
(f) Transverse lines, painted island and arrestor bed markings (any colour)	square metre (m ²)

The unit of measurement for painting the lines shall be a kilometre of each specified width of line and the quantity paid for shall be the actual length of line painted in accordance with the instructions of the Employer's Agent, excluding the length of gaps in broken lines.

The unit of measurement for painting the lettering, symbols, transverse lines or painted island and arrestor bed markings shall be a square metre, and the quantity to be paid for shall be the actual surface area of lettering, symbols or transverse lines, painted island and arrestor bed markings completed in accordance with the instructions of the Employer's Agent.

The tendered rate per kilometre or per square metre as the case may be for painting the road markings shall include full compensation for procuring and furnishing all material, including the retro-reflective beads in the case of retro-reflective paint, and the necessary equipment, and for painting, protecting and maintenance as specified, including the setting-out of lettering, symbols and transverse lines, painted island and arrestor bed markings, but excluding setting out and premarking the lines.

Item	Unit
M460.04 Setting out and pre-marking the lines (excluding traffic-island markings, lettering and symbols)	kilometre (km)

The unit of measurement for setting out lines shall be the kilometre of lines set out and marked. Where two or three lines are to be painted next to each other and where the centre to centre distance between adjacent lines does not exceed 500mm, the setting-out of lines shall be measured only once.

The tendered rate shall include full compensation for setting out and premarking the lines as specified, including all materials.

Item	Unit
M460.05 Removal of existing, temporary or permanent road markings by:	
(a) Sandblasting	square metre (m ²)
(b) Overpainting as temporary measure	square metre (m ²)

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.

Item	Unit
M460.06 Provisional sum for road-markings:	
(a) Provisional sum provisional sum	(Prov Sum)
(b) The Contractor's overhead charges and profit in respect of sub-item M460.06(a)	percentage (%)

Measurement and payment shall be in accordance with the provisions of Subclause 13.5 of the General Conditions of Contract for Construction Works, 2015 2nd edition. The tendered percentage is a percentage of the amount actually spent under sub-item M460.06(a), which shall include full compensation for the overhead charges and profit of the Contractor.

SERIES M4000 : ROAD TRAFFIC SIGNS AND ROADSIDE FURNITURE

SECTION M4700 : MAINTENANCE OF LAY-BYES AND REST AREAS

CONTENTS

M4701 SCOPE
M4702 EXECUTION OF WORK
M4703 ACCOMMODATION OF TRAFFIC
M4704 MEASUREMENT AND PAYMENT

M4701 SCOPE

This section covers the work in connection with the maintenance of lay-byes and rest areas.

M4702 EXECUTION OF WORK

The detail and specification will be supplied by the Employer's Agent for the maintenance of lay-byes and rest areas.

M4703 ACCOMMODATION OF TRAFFIC

The cost of the accommodation of traffic for this section is included in the provisional sum of sub-item M470.01 (a).

M4704 MEASUREMENT AND PAYMENT

M4700 MAINTENANCE OF LAY-BYES AND REST AREAS

Item	Unit
M470.01 Maintenance of lay-byes and rest areas	
(a) Provisional Sum provisional sum	(Prov Sum)
(b) The Contractor's overhead charges and profit in respect of sub-item M470.01 (a)	Percentage (%)

Payment shall be made in accordance with the General Conditions of Contract for Construction Works, 2015, 3rd edition.

The tendered percentage for sub-item M470.01 (b) is a percentage of the amount actually spent. The percentage shall include for the overhead charges and profit of the Contractor for the maintenance of lay-byes and rest areas.

SERIES M5000 : PROTECTION WORK

SECTION M5100 : GENERAL EROSION PROTECTION

CONTENTS

M5101 SCOPE
M5102 EXECUTION OF WORK
M5103 ACCEPTANCE CRITERIA
M5104 MATERIALS
M5105 MEASUREMENT AND PAYMENT

M5101 SCOPE

This section covers all work in connection with the construction of protective covering on exposed surfaces where required, as well as maintenance of existing protective covering.

M5102 EXECUTION OF WORK

Protective covering shall be constructed where directed by the Employer's Agent.

Any of the following types of protective covering may be required and the construction thereof shall be in accordance with the specifications, drawings and the Employer's Agent's instructions.

- Stone pitching
- Block paving
- Stone masonry walls
- Concrete grass blocks
- Concrete pitching
- Riprap

(a) Preparation work

The area for each type of protective covering shall be prepared as shown on the drawings and as described in the Project Specification before constructing the protective covering. Generally the areas shall be prepared by excavating, shaping and trimming and by thoroughly compacting the area by handramming or a small hand compactor to prevent subsequent settlement. For certain protective work a trench is to be excavated as directed by the Employer's Agent along the toe of any slope to be protected.

If so instructed by the Employer's Agent, the surface of the prepared area shall be treated with suitably registered non-selective pre-emergence pesticides for the control of all plant species. The chemical used will be one that has very limited movement in the soil with a residual action of between 3 to 6 months dependant on soil types. Care must be taken that areas outside of the prepared area are not affected by the chemical application.

For erosion protection such as Stone pitching Method 2 where grass may be planted between spaces, no initial treatment of the ground should be done. The Employer's Agent may issue an instruction for the application of a selective herbicide for the control of broadleaf weeds on completion of the task if required.

The Contractor's attention is drawn to the requirement that pesticides may only be applied by duly registered, competent Contractors in possession of a current Pest Control certificate for the use and application of herbicides for weed control (limitation restrictions will not be accepted other than Industrial Application) as supplied by the National Department of Agriculture.

Where necessary, the application of insecticides for the control of ants / termites may be deemed necessary by the Employer's Agent. Should an instruction be received for their application the following applies: The Contractor's attention is drawn to the requirement that pesticides may only be applied by duly registered, competent Contractors in possession of a current Pest Control certificate for the use and application of insecticides for either structural pest control or wood preservation.

For both vegetation and ant control the following applies: The registered Contractor shall be at the site of application at all times during spraying and ensure that no damage is caused to other plants inside or adjacent to the treated areas as a consequence of the application. Application shall not be carried out in high winds or wet weather.

The following chemicals may not be used:

- Agents of an explosive, flammable, volatile or corrosive nature
- Sodium chlorate
- Volatile low hormone type herbicides
- Agents which are not registered in the Republic of South Africa

The Contractor shall state the brand names of the herbicides and insecticides, on which the tendered rate is based on which shall be subject to the approval of the Employer's Agent, prior to the application thereof.

The chemical should be strictly applied at the rate recommended by the manufacturer.

(b) Stone pitching

(i) Plain stone pitching

Method 1

The stones shall be laid with their longitudinal areas at right angles to the slope and with staggered joints. The stones shall be well rammed into the bank or surface and the spaces between the larger stone shall be filled with spalls of approved pitching stone securely rammed into place.

Method 2

The technique and requirements laid down for Method 1 shall apply except in the following aspects.

- No small stones or spalls shall be used to fill in spaces between larger stones.
- Simultaneously with the placing of stones, topsoil shall be introduced between individual stones and sufficiently rammed as to provide a firm bonded structure. The topsoil shall be provided to the full depth of the stone pitching at any point.
- Rooted grass or tufts of grass shall then be planted between stones and watered immediately and copiously and thereafter at regular intervals until the grass has been established.

(c) Grouted stone pitching

This work shall be done as described for plain pitching except that the spaces between the stones shall be filled with cement grout consisting of one part cement to every six parts of sand. The stone shall be clean and the grout placed in a continuous operation ensuring that all spaces and voids are completely filled.

The grouted pitching shall be cured with wet sacking or other approved wet cover for a period of not less than four days and shall not be subjected to loading until adequate strength has been developed.

Where required weepholes shall be formed in the pitching.

(d) Wired-and-grouted stone pitching

Pitching shall be held in position at the bottom and top with wire nets with 150mm mesh. The bottom net with the wire ties at 600mm distances projecting upwards shall first be placed over the surface. After the stone has been placed in accordance with the requirements for plain pitching the top net shall be placed and drawn tightly over the stone course and securely fastened to the wire ties. The entire area of wired pitching shall then be grouted in accordance with the requirements for grouted pitching.

(e) Grouted pitching on a concrete bed

The concrete bed (15MPa concrete) with a thickness of at least 75mm shall be placed first. The stone pitching shall be stones with a minimum dimension of 200mm and shall be laid while the concrete is still fresh. Openings between the stones shall be filled with cement grout as described for grouted stone pitching.

Curing shall be carried out as described for grouted stone pitching.

(f) Riprap

Riprap shall consist of a course or courses of large rock placed on bank slopes and toes in stream and riverbeds and at other localities where protection of this type may be required.

The perimeter of riprap areas shall be protected by the construction of either rock-filled trenches, walls or other structures as may be required.

(i) Packed riprap

Packed riprap shall be constructed from rocks placed individually to stagger the joints and so as to be firmly bedded. The spaces between larger stone shall be filled with spalls or smaller stone securely rammed into place. On unlined surfaces the rock shall always be laid in long horizontal strips starting from the bottom.

(ii) Dumped riprap

Dumped riprap shall be constructed by dumping the stone on the prepared surface, spreading it by bulldozer or other suitable earthmoving equipment and trimming it to the required lines and levels. The material shall be placed in a manner that will prevent the segregation of the smaller and larger stones and the top layer shall be tight with a minimum of voids.

(iii) Filter bed

The filter bed shall consist of a layer or layers of permeable material placed on the prepared surface to the required thickness and each layer shall be finished to an even surface and thickness. Compaction of previous material will not be required. Care shall be taken not to mix the various grades of filter material neither to disturb material already placed when subsequent layers or riprap are being placed.

When the use of synthetic-fibre fabric is required, the material shall be placed on the prepared surface or on the filter bed depending on the instructions. The overlap between adjacent sheets shall be 150mm unless otherwise specified. Care shall be taken not to damage the filter fabric when subsequent layers are being placed, neither to expose the filter fabric to the sun for periods exceeding three days before it is covered up.

(g) Stone masonry walls

Stone masonry walls shall be either plain packed stonewalls with dry joints or mortared walls with stones bedded in cement mortar.

The minimum mass of each stone used shall be 1kg and its minimum dimensions 75mm. Unless otherwise directed by the Employer's Agent stone shall be obtained from a commercial source.

(i) Plain packed stone walls

A foundation trench shall be excavated to the depth indicated by the Employer's Agent and large selected stone shall be used for the foundation layer. Stones shall be laid individually with the largest dimension in the horizontal plane and with staggered joints. The spaces between the larger stones shall be filled with spalls securely rammed into place. The top and ends of the wall shall be neatly finished with selected copingstones.

(ii) Cement-mortared stone walls

The walling shall be constructed as specified for plain packed stone walls with the exception that the stones shall be clean and wetted and set in a 6:1 sand: cement mortar. The mortar shall be flush pointed to the satisfaction of the Employer's Agent who may require a capping and end treatment of the same mortar.

The walling shall be kept moist for a minimum period of four days after completion.

(h) Segmental block paving

Unless otherwise instructed by the Employer's Agent the underlying layer shall be compacted before laying the paving blocks. The Contractor shall bring the top 150mm of the in situ material to optimum moisture content, then compact the layer and when tested with a dynamic cone penetrometer (DCP) the average penetration recorded after 5 blows shall not exceed 50mm. The full depth of the layer shall be tested.

(i) Sand bedding

A layer of sand to the uncompacted thickness required by the Employer's Agent shall be accurately placed on top of the prepared surface and accurately floated so as to achieve the correct level to the pavement after compaction.

(ii) Laying of paving blocks

The pattern for laying shall be that as shown on the drawings or directed by the Employer's Agent. Unbroken blocks shall first be laid and filler pieces, neatly sawn, afterwards. The joints between blocks shall be between 2mm and 6mm and the top faces of the blocks shall be flush.

After the paving blocks have been laid, the pavement shall be compacted by two passes of a suitable vibratory-plate compactor operating at a frequency of 65-100Hz and a low amplitude. Its plate surface shall be 0.2m² - 0.4m² and shall develop a centrifugal force of 7 - 16kN.

After compaction, joint sand shall be spread and brushed into the joints until the joints have been properly filled. Surplus sand shall be brushed off and the pavement shall then be subjected to two further passes by the plate vibrator.

(iii) Edge beams

Concrete edge beams or any such other edge supports shall be constructed onto the supporting layer in accordance with the details shown on the drawings, and shall be constructed and left to cure before any paving blocks are laid.

(iv) Paving blocks for sidewalks

Paving blocks for sidewalks shall be laid in the same way as that described for paving blocks, also on a bed of sand but the joints shall be filled with a 6:1 sand: cement instead.

(v) Concrete grass blocks

Concrete grass blocks shall have the size specified or shown on the drawings. The holes in the blocks shall be filled with topsoil and grassed with grass cuttings or hydroseeding.

(i) Cast *in situ* concrete pitching

The areas for cast in situ concrete pitching shall be trimmed and prepared as described for block paving. The areas shall also be treated with vegetation destroyer and ant poison according to the instructions of the manufacturers.

Prior to placing the concrete the surface shall be watered and kept damp until the concrete has been placed. The type of concrete used shall unless otherwise specified, be Class 20 and the concrete shall be accurately laid in alternate panels to the lines and levels indicated, after which the remaining panels shall be suitably placed. The concrete shall be thoroughly compacted and finished to Class U2 surface finish.

Where required concrete edge beams shall be constructed as described for paving blocks.

The concrete pitching shall be cured for at least seven days and no traffic shall be allowed to move across the pitching before the specified 28-day strength has been reached.

(j) Repairs to damaged existing protective covering

The removal and reconstruction of damaged protective covering shall be carried out where ordered by the Employer's Agent.

Protective covering shall be removed to the extent and depth ordered by the Employer's Agent. The reconstruction shall be carried out with the material removed, if suitable, and supplemented with new material where required.

M5103 ACCEPTANCE CRITERIA

The various items shall be constructed neatly to the dimensions shown on the drawings and within the specified dimensional and alignment tolerances.

M5104 MATERIALS

(a) Stone

(i) Stone for pitching shall be sound and durable without any stone less than 200mm minimum dimension, except that smaller pieces or spalls may be used for filling spaces between the larger stones. The shape of the stone shall be so as to form a stable protective layer of the required thickness. All stone for use in pitching work shall be obtained from a commercial source approved by the Employer's Agent.

(ii) Stone for riprap shall be hard quarry stone not susceptible to disintegration or excessive weathering on exposure to the atmosphere or water.

The required size of the stone will depend on the "critical mass" specified in the Project Specifications.

(b) Cement

Cement shall be either common cement or masonry cement, which complies with the requirement of SABS ENV197-1 and ENV413-1.

(c) Sand

(i) Sand for concrete

Sand for concrete, cement slurry and cement mortar shall comply with the requirements of SABS 1083.

(ii) Sand for bedding

Sand for bedding used for paving blocks shall not contain any deleterious impurities and shall comply with the grading requirements as specified in the Project Specifications.

(iii) Sand used for being brushed into joints between pavement blocks shall all pass through a 1.18mm sieve and between 10 and 50 per cent of it shall pass through an 0.075mm sieve.

(d) Paving blocks

Paving blocks shall comply with the requirements of SABS 1058 for Class 25 paving blocks where paving blocks are made of concrete, and bricks used as paving blocks shall be facebrick units which shall comply with the requirements of SABS 227. Employer's Agenting units may also be used instead of facebrick units.

The surface texture and colour of all units shall be uniform. Concrete blocks shall be interlocking or rectangular blocks, depending on whichever has been specified in the Schedule of Quantities or in the Project Specifications.

Paving blocks for sidewalks shall be square fabricated concrete blocks, 450mm x 450mm in size and fabricated from Class 30 concrete. The upper surface shall have an approved pattern to provide proper skid resistance.

Concrete grass blocks shall consist of concrete slabs of the dimensions shown on the drawings with openings through the slab totalling at best 20% of the surface area.

(e) Concrete

The class of concrete to be used in concrete work shall be that indicated on the drawings or specified in the Project Specifications.

(f) Wire

Wire for wired stone pitching shall consist of 4.0mm diameter galvanised wire, which complies with the requirements of SABS 675.

(g) Permeable material for filter layer

Permeable material for filter layers shall comply with the requirements specified in the Project Specifications.

(h) Synthetic-fibre filter fabric

Synthetic-fibre filter fabric shall be of the grade and type specified in the Project Specifications.

M5105 MEASUREMENT AND PAYMENT

M5100 GENERAL EROSION PROTECTION

Item	Unit
M510.01 Stone pitching	
(a) Plain pitching	
(i) Method 1	square metre (m ²)
(ii) Method 2	square metre (m ²)
(b) Grouted pitching	square metre (m ²)
(c) Wired-and-grouted pitching	square metre (m ²)
(d) Grouted pitching on a concrete bed (total thickness indicated)	square metre (m ²)

The unit of measurement for pitching shall be the square metre of each type of pitching in place.

The tendered rate for each type of stone pitching shall include full compensation for furnishing all materials, compacting and trimming the excavated surfaces, forming and cleaning the weepholes and for all other work necessary for completing the pitching as specified. The tendered rate for grouted stone pitching on a concrete bed shall also include full compensation for the concrete bed.

Item	Unit
M510.02 Riprap	
(a) Packed riprap (critical mass of stone indicated)	cubic metre (m ³)
(b) Dumped riprap (critical mass of stone indicated)	cubic metre (m ³)

(c) Filter backing	
(i) Crushed stone	cubic metre (m ³)
(ii) Filter sand	cubic metre (m ³)
(d) Synthetic-fibre filter fabric (type, class and grade stated)	square metre (m ²)

The unit of measurement for riprap and filter layer shall be the cubic metre of riprap and filter layer in place. The unit of measurement for synthetic filter fabric shall be the square metre of filter fabric laid as specified including overlaps.

The tendered rates shall include full compensation for preparing the surfaces and for furnishing, transporting, handling and placing of riprap or filter layers. The rate tendered for the filter fabric shall include full compensation for procuring and furnishing the filter fabric and for laying it as specified, including wastage.

Item	Unit
M510.03 Stone masonry walls	
(a) Plain packed stone	cubic metre (m ³)
(b) Cement-mortared stone walls	cubic metre (m ³)

The unit of measurement shall be the cubic metre of actual walling constructed.

The tendered rate for each type of stone wall shall include full compensation for furnishing all materials, trimming the areas, and placing the stone and cement-mortared masonry for completing the walls in accordance with the specifications.

Item	Unit
M510.04 Concrete pitching and block paving	
(a) Cast in situ concrete pitching (Class of concrete and thickness of pitching indicated)	square metre (m ²)
(b) Segmented block paving (type and thickness indicated)	square metre (m ²)
(c) Prefabricated concrete grass blocks	square metre (m ²)
(d) Prefabricated concrete paving blocks for sidewalk pavement (thickness indicated)	square metre (m ²)

The unit of measurement shall be the square metre of each type constructed.

The tendered rates shall include full compensation for furnishing all materials, all excavation, compacting and trimming all the excavated areas providing a sand bedding, laying concrete grass blocks including topsoil and grassing, constructing concrete pitching, including normal formwork and the shaping of surfaces and for all other work necessary for completing the work as specified.

Item	Unit
M510.05 Concrete edge beams	cubic metre (m ³)

The unit of measurement shall be the cubic metre of concrete in edge beams constructed as instructed.

The tendered rate shall include full compensation for furnishing all material and labour including formwork as necessary, placing concrete and shaping all surfaces and all excavations required.

Item	Unit
M510.06 Foundation trenches	cubic metre (m ³)

The unit of measurement shall be the cubic metre of material excavated for trenches irrespective of the class or depth of material. The quantity shall be calculated according to the dimensions shown on the drawings or instructed by the Employer's Agent.

The tendered rate shall include full compensation for the excavation of the foundation trenches complete as shown on the drawings or as directed by the Employer's Agent.

Item	Unit
M510.07 Provision of vegetation destroyer and ant poison	
(a) Herbicide	
(i) Selective (specify name)	litre (l)
(ii) Non selective (specify name)	litre (l)
(b) Ant poison	
(i) Specify brand name	litre (l)

The unit of measurement shall be the liter of material applied at the manufacturer's recommendation.

The tendered rates shall include full compensation for providing the material and all labour and equipment required for spraying the material at the required rate of application.

SERIES M5000 : PROTECTION WORK

SECTION M5200 : GABION PROTECTION

CONTENTS

M5201 SCOPE
M5202 EXECUTION OF WORK
M5203 MATERIALS
M5204 ACCEPTANCE CRITERIA
M5205 MEASUREMENT AND PAYMENT

M5201 SCOPE

This section covers the construction of gabion baskets for retaining walls at structure embankments and unstable slopes and the construction of gabion mattresses in watercourses for scour protection. It includes the maintenance of existing gabion structures.

M5202 EXECUTION OF WORK

Gabion baskets and mattresses shall be constructed where directed by the Employer's Agent.

(a) Preparing the foundation and surface

The surface on which the gabion cages are to be laid prior to their being filled with rock, shall be levelled to the depth shown on the drawings or as directed by the Employer's Agent so as to provide an even surface. Where required a foundation trench along the toe of the cages shall be excavated to the required dimensions.

(b) Filter fabric below the cages

Where indicated on the drawings or ordered by the Employer's Agent, one layer of filter fabric of the type and grade specified shall be placed on the prepared surface prior to the cages being placed. The fabric shall be placed in strips with a minimum overlap of 300mm at the joints, and shall be properly fastened to prevent any movement or slipping while cages are being placed.

(c) Assembling of cages

Before assembling, the cages shall be stretched out on a hard flat surface and any kinks stamped out. The method of construction, placing in position, wiring and filling the gabions with rock shall generally be in accordance with the manufacturer's instructions which have been approved by the Employer's Agent; but nevertheless sufficient connecting wires shall be tensioned between the vertical sides of all outer visible cells to prevent the deformation of cages as they are being filled with stone.

It is essential that the corners of gabion cages be securely wired together to provide a uniform structure. Consecutive courses of cages shall be bonded as in brickwork so as to provide the staggering of the vertical joints.

Where necessary to form curves and angles, the mesh and selvedge wires shall be folded and securely bound. Cutting of the mesh and selvedge wires will not be permitted unless authorised by the Employer's Agent.

(d) Rock filling

(i) Gabion baskets

The cages shall be filled in even layers to prevent deformation and bulging. Selected stone of the specified size shall be packed in the visible sides so as to obtain an even-faced finish. Cages shall be filled to just below the level of the wire braces, after which the braces shall be twisted to provide tension.

(ii) Gabion mattresses

The mattresses shall be filled by random stones being packed in the first layer and by selected stones being used for the top layer so as to resemble normal stone pitching.

(e) Repairing existing gabion structures

M5203 MATERIALS

Repair work to existing gabion structures shall be carried out as directed by the Employer's Agent. It may involve the removal of stone from the cages, the repacking thereof and the placing and tying of new gabion wire mesh. Equipment and labour required for repair work shall be paid for on a daywork basis under the hourly rates in the daywork schedule. The provision and installing of new gabion mesh shall be paid for under the relevant pay items in this section.

(a) Wire

All wire used for making the gabions for tying during construction shall comply with the requirements of SABS 675 for mild-steel wire and shall be galvanised in accordance with the provisions of SABS 675 for Class A heavy galvanized mild-steel wire.

(b) Wire mesh

Wire mesh shall be hexagonally woven mesh in which the joints are formed by each pair of wires being twisted through the three half-turns.

The diameters of the wire and the size of meshes shall be as follows:

Depth of gabion	Mesh Size (mm)	Wire diameter (mm)
0,5m and over	80 x 100	2,5
	100 x 120	2,7
0,2m - 0,3m	80 x 100	2,2

Other combinations of mesh size and wire diameter may be used when specified in the Project Specification.

(c) PVC-coated wire

Whenever gabions with PVC-coated wire are specified, the wire used for gabion mesh and for tying during construction shall be galvanised as specified, supplied with an extruded polyvinyl chloride coating (PVC coating). The average thickness of the PVC coating shall be not less than 0,5mm and the minimum thickness shall be 0,4mm. It shall also be resistant to the harmful effect of normal weather and to being exposed to salt water.

The gabions of PVC-coated wire shall be of an acknowledged make, which shall be subject to approval by the Employer's Agent.

(d) Filter fabric

The filter fabric to be used shall be of the type and grade specified in the Project Specifications.

(e) Rock

Rock used in filling of cages shall be clean, hard unweathered rock fragments obtained from a commercial source which shall be subject to the approval of the Employer's Agent.

No rock fragment shall exceed the maximum size specified for the various gabion cage sizes and at least 85% of the rocks shall be of a size equal to or above the minimum size specified.

M5204 ACCEPTANCE CRITERIA

Each finished gabion structure shall present a neat exposed face true to line and free from bulges in excess of 50mm.

M5205 MEASUREMENT AND PAYMENT

M5200 GABION PROTECTION

Item	Unit
M520.01 Foundation trench excavation and backfilling	
(a) In solid rock (material which requires blasting)	cubic metre (m ³)
(b) In all other classes of material	cubic metre (m ³)

The unit of measurement shall be the cubic metre of each class of excavation made in accordance with the authorised dimensions.

The tendered rates shall include full compensation for excavating in each class of material including unavoidable overbreak, the trimming of trenches and compacting the trench inverts, backfilling and compacting the backfill and the disposal of surplus material.

Item	Unit
M520.02 Surface preparation for bedding the gabions	square metre (m ²)

The unit of measurement for levelling and preparing surfaces for receiving the gabions shall be the square metre to the neat dimensions of revetments, aprons or wall foundations.

The tendered rate shall include full compensation for excavating, filling any cavities with rock and levelling the ground surface so as to be ready for receiving the gabion cages for retaining walls, aprons and revetments.

Item	Unit
M520.03 Gabions	
(a) Gabion baskets (size of basket and mesh indicated)	cubic metre (m ³)
(b) Gabion mattresses (depth of mattress, mesh size and diaphragm spacing indicated)	cubic metre (m ³)

The unit of measurement shall be the cubic metre of the rock-filled cages and the quantity shall be calculated from the dimensions of the gabions indicated on the drawings or prescribed by the Employer's Agent, irrespective of any deformation or bulging of the completed gabions.

The tendered rates shall include full compensation for supplying all the materials, including rock fill, wire-mesh cages, tying and connecting wires, loading, transporting and off-loading, the assembling and filling of the cages, and any other work necessary for constructing the gabions.

Item	Unit
M520.04 Extra over Item M520.03 for supplying gabions with PVC-coated wire	cubic metre (m ³)

The tendered rate shall include full compensation for the additional cost, over and above the rate tendered for the relevant item, for supplying PVC-coated gabions and tying wire.

Item	Unit
M520.05 Filter fabric (type and grade indicated)	square metre (m ²)

The unit of measurement shall be the square metre of area covered with filter fabric placed in position.

The tendered rate shall include full compensation for supplying the filter fabric, cutting waste, placing, joining, overlapping and securing the material in position.

SERIES M6000 : VEGETATION MAINTENANCE

SECTION M6100 : CONTROLLING VEGETATION GROWTH: MOWING AND CUTTING

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M6101 SCOPE
M6102 EXECUTION OF WORK
M6103 ACCEPTANCE CRITERIA
M6104 EQUIPMENT
M6105 PENALTIES
M6106 MEASUREMENT AND PAYMENT

M6101 SCOPE

This section covers the control of planted or natural grasses and vegetation by means of mechanical mowers or by hand on single and dual carriageway roads. It includes the removal of the grass cuttings by means of mechanical balers or by hand.

M6102 EXECUTION OF WORK

As part of the mowing and cutting operation all declared vegetation and undesirable vegetation (of which the stem girth is less than 151mm) shall be taken to be one and the same thing. Mowing of grass shall be classified into shoulder mowing and general mowing.

(a) Shoulder mowing

Shoulder mowing along main carriageway (National Route) shall include the following:

(i) Strips adjacent to the road surface

The widths of the strips are:

- Gravel shoulders: Gravel shoulders and side slopes over a width of 3,0m as shown on the drawings (3m from edge of gravel shoulder).
- Surfaced shoulders: Gravel round-off and side slopes over a width of 3,0m as shown on the drawings (3m from edge of surface).

The width of the strip shall be measured from the outer edge of the surfacing, except where there is a concrete side drain adjacent to the edge of the surfacing. In the latter case it shall be measured from the outer edge of the concrete side drain. The grass between the surfacing and concrete side drain shall also be cut as shown on the drawings.

(ii) Grassed side drains

Any grassed or gravel side drains and any area between either concrete/tarred or concrete/tarred surfaces falling within the adjacent strips.

(iii) Culvert inlet and outlet areas including the removal of all cuttings to avoid creating blockages.

(iv) The median.

The full width of the median (if it exists).

(v) Interchanges

The area of an interchange is defined as the full road reserve starting and ending from the furthest points of intersection of the outside edges of the ramp and the main carriageway. This includes the full reserve width of the cross road extending up to the limits of the South African National Roads Agency responsibility, or as indicated with the marker plates or pegs on site.

Shoulder mowing at interchanges shall consist of the mowing of strips adjacent to the edges of all ramps, cross roads, sight triangles and carriageways within the area of the interchange as indicated on the drawings.

(b) General mowing

General mowing along main carriageway (National Route), including interchanges, covers all areas inside the road reserve including the road reserve of cross roads up to a distance extending up to the limits of the South African National Roads Agency responsibility, or as indicated on the drawings.

(c) Designated areas

The Contractor shall cut all grass and weeds in designated areas in the road reserve, such as the sight triangles at intersections, the areas in front of and around road signs and kilometre reference markers, and all other areas as specified or as shown on the drawings. The dimensions and location of the areas in which the grass and weeds are to be cut shall be as shown on the drawings. The Contractor shall control all vegetation growth around signs in such a way necessary to prevent any damage to the signs due to veld fires. The Contractor will replace all signs damaged due to veld fires at the Contractor's own cost.

(d) Requirements

The following shall apply for any mowing and cutting operation:

(i) The grass shall be mowed to a height of not less than 50mm and not more than 150mm measured above the surrounding ground level and removed.

(ii) No distinction will be made between grass on flat areas or on slopes.

(iii) The Contractor shall be responsible for baling or the collection and disposal of all grass cuttings by machine or by hand. Grass cuttings may be left in sparsely covered areas but shall be evenly distributed as directed by the Employer's Agent.

(iv) The road pavement shall be kept clear of grass spreading over the edges.

(v) Concrete side drains shall be cut clear of grass spreading over the edges or growing in the joints. After removal of the grass, the concrete surfaces shall be swept clean of grass.

(vi) The removal of the bales or heaps of grass shall be undertaken at the same rate of progress as the baling operation. Bales or heaps of grass

shall not be left in drainage channels or be left in the road reserve for a period exceeding two days, or be left in the road reserve over weekends, or be left in the road reserve closer than 4m from the edge of the tarred surface.

(vii) Certain areas around road signs, trees, large obstructions, under guard-

rails, at wingwalls and abutments, on steep slopes and in drainage trenches and dongas will not lend themselves to normal machine cutting and these areas shall be cut using alternative methods. The finished work shall provide a neat and evenly cut appearance with no isolated tufts of grass left remaining.

(viii) Cutting by hand, cleaning and removal of grass cuttings shall keep up with the mechanical mowing. At no time shall the mechanical mowers be allowed to be more than 7km ahead of the labour finishing behind.

(ix) Grass flattened by implements during the mowing and cutting process shall be cut by hand.

(x) No grass or other plant cuttings may be burnt in the road reserve or in the immediate vicinity of any road.

M6103 ACCEPTANCE CRITERIA

(a) Designated areas

The height of the grass shall not be less than 50mm and not more than 450mm at any time during the maintenance period. The area of each sight triangle, kilometre reference marker boards and road signs will be evaluated individually when monthly inspections are done. The Contractor will not be allowed more than 2 of the abovementioned areas in any 3km section of road inspected for noncompliance with the above.

(b) General and shoulder mowing

Vegetation shall be cut to the required height and mowing done evenly without abrupt changes or breaks at and within the period specified. Areas shall be left neat and tidy with all vegetation cutting removed.

M6104 EQUIPMENT

The mechanical mowers shall be in good order and fitted with a boom mounted flail cutting attachment to cut vegetation on slopes. The mower shall be fitted with two high intensity amber flashing lights, which shall be visible from both the front and the rear of the vehicle.

Safety precautions must be taken to ensure that the mower does not project or propel any stone or object, which may cause injury to persons or damage to public vehicles.

Provision shall be made for one flagman to accompany each motorised mower. The flagmen shall thoroughly be trained to carry out the flagging procedure required for the mowing activity to ensure that the travelling public respects warnings given by them.

The mower shall as far as possible always operate in the direction of traffic flow and the flagman shall maintain a distance of approximately 150m behind the mower.

M6105 INSPECTION OF MOWING FOR PAYMENT

Inspection for the designated areas to be based on the following:

- Inspection of the designated areas will be monthly.
- The road will be broken up into 3km sections.
- The total length of the road will be divided by 20 to determine the number of sections to be inspected. A maximum of 10 sections and a minimum of 4 will be inspected and the positions will be chosen randomly.
- If the section does not comply with the acceptance criteria that section fails.
- The Contractor will be penalised by the number of failed sections multiplied by the penalty amount specified in the Project Specifications.

M6106 MEASUREMENT AND PAYMENT

M6100 GRASS CUTTING: SHOULDER AND GENERAL MOWING

Item	Unit
M610.01 Shoulder mowing and removal of grass cuttings	
(a) Reserve with dual carriageway (State section and km distance incl. interchanges)	hectare (ha)
(b) Reserve with single carriageway (State section and km distance incl. interchanges)	hectare (ha)

The unit of measurement shall be the number of shoulder mow and removal of grass cuttings operation for section as specified.

The tendered rate shall include full compensation for furnishing all equipment and labour for each mow and removal operation, regardless of whether the grass is cut by machine or manual labour, and shall include all costs for the picking up and disposal of grass cuttings, all as specified in Clause M6102.

No separate payment will be made for cutting grass on steep or rocky slopes. The tendered rate shall also include for removal of cut grass from all open drains of growth as specified in this section and the cutting of grass around road signs.

Item	Unit
M610.02 General mowing and removal of grass cuttings	
(a) Reserve with dual carriageway (State section and km distance incl. interchanges)	hectare (ha)
(b) Reserve with single carriageway (State section and km distance incl. interchanges)	hectare (ha)

The unit of measurement shall be the number of general mow and removal of grass cuttings operation for section as specified.

The tendered rate shall include full compensation for furnishing all equipment and labour for each mow and removal operation, regardless of whether the grass is cut by machine or manual labour, and shall include all costs for the picking up and disposal of grass cuttings, all as specified in Clause M6102.

No separate payment will be made for cutting grass on steep or rocky slopes. The tendered rate shall also include for removal of cut grass from all open drains of growth as specified in this section and the cutting of grass around road signs.

The width of cut for general mowing shall always be from full road reserve width, irrespective whether it is a single carriageway, dual carriageway or single carriageway in a future dual carriageway road reserve.

Item	Unit
M610.03 Additional interchange mowing and removal of grass cuttings on instructions by the Employer's Agent	
(a) Shoulder mowing (State interchanges)	hectare (ha)
(b) General mowing (State interchanges)	hectare (ha)

The unit of measurement for sub-item M610.03 (a) and (b) shall be the number of interchanges mowed and baled on instruction of the Employer's Agent in addition to the Contractor's obligation under payment sub-item M610.01 (a) and (b) and sub-item M610.02 (a) and (b).

The tendered rate shall include full compensation for furnishing all equipment and labour for each mow and removal operation, regardless of whether the grass is cut by machine or manual labour, and shall include all costs for the picking up and disposal of grass cuttings, all as specified in Clause M6102.

No separate payment will be made for cutting grass on steep or rocky slopes. The tendered rate shall also include for removal of cut grass from all open drains of growth as specified in this section and the cutting of grass around road signs.

The width of cut for general mowing shall always be from fence to fence, irrespective whether it is a single carriageway, dual carriageway or single carriageway in a future dual carriageway road reserve.

M6110 GRASS CUTTING: DESIGNATED AREAS

Item	Unit
M611.01 Cutting of designated areas	
(a) Sight triangle at intersection, road signs and marker boards	number (No)

The monthly rate shall include full compensation for furnishing all equipment and labour, for all mow and removal operations regardless of the quantities, or whether the grass is cut by machine or manual labour, and shall include all costs for picking up and disposal of grass cuttings as specified.

No separate payment will be made for cutting grass on steep or rocky slopes.

The tendered rate shall include full compensation for furnishing all plant, equipment and labour for each mow operation, regardless of whether the grass is cut by machine or manual labour, all as specified.

Item	Unit
M611.02 Additional cutting of areas	
(a) Any area on instruction from the Employer's Agent	area (m ²)
(b) Cut next to fence line (indicate width)	kilometre (km)
(c) 1m cut either side of concrete drains	kilometre (km)

The unit of measurement for sub-items M611.02 (a) is the area cut in accordance with the drawings, on instruction of the Employer's Agent.

The unit of measure for sub-item M611.02 (b) and (c) is the actual kilometre of strips cut. For sub-item M611.02 (c) cut on either side of the drain will be measured along the centre line of the drain.

No separate payment will be made for cutting grass on steep or rocky slopes.

The tendered rate shall include full compensation for furnishing all plant, equipment and labour for each mow operation, regardless of whether the grass is cut by machine or manual labour, all as specified.

SERIES M6000 : VEGETATION MAINTENANCE

SECTION M6300 : REMOVAL OF UNDESIRABLE VEGETATION: PHYSICAL ERADICATION

CONTENTS

M6301 SCOPE
M6302 EXECUTION OF WORK
M6303 ACCEPTANCE CRITERIA
M6304 MEASUREMENT AND PAYMENT

M6301 SCOPE

This section covers the physical eradication of undesirable vegetation which shall be followed with chemical eradication as included in section M6200 as well as the felling and removal of undesirable trees in the road reserve, bush clearing and the burning of firebreaks.

M6302 EXECUTION OF WORK

(a) Removal of undesirable vegetation

The Contractor shall remove all noxious weeds, invader plants and other undesirable vegetation in the first two months of the contract period, thereafter it shall be removed annually. Additional clearing may be ordered by the Employer's Agent should the need be determined.

All noxious weeds, invader plants and other undesirable vegetation shall be removed by uprooting and by cutting brush with suitable equipment such as brush cutters, chainsaws or bowsaws.

The sight distance of all signs must be kept clear of all noxious weeds, invader plants, trees and other undesirable vegetation as indicated on the drawings.

For the purposes of this Clause, undesirable plant growth shall include, but not limited to all declared species as listed in category 1 and 2 of the Conservation of Agricultural Resources Act. This list will alter between provinces and note must be taken of this when determining the species to be eradicated. Undesirable plants will not only be those listed under category 1 and 2 but will also include those deemed to be invasive within any identified area or region.

Vegetation growing within 200mm of the road pavement in the case of grassed shoulders shall also be considered as undesirable vegetation growth.

Specific areas requiring to be treated in this manner shall be specified or indicated on the drawings.

All branches and stems shall be cut into manageable sizes for loading and transporting purposes. The removed vegetation shall then be disposed of in a manner approved by the Employer's Agent.

In areas where vegetation has grown out of control, the Contractor shall clear the vegetation by cutting and removal to the designated dumpsite.

The vegetation shall be cut to a height of 50mm - 100mm measured above the surrounding ground level, and removed from the site to a dump site approved by the Employer's Agent. The cut faces shall be painted with approved herbicide to prevent re-growth.

(b) Tree felling

Tree felling will be executed on those trees not included under M6302 (a). Only those trees as indicated by the Employer's Agent on site shall be cut and removed.

Care shall be taken not to damage overhead services, buildings, structures and fences during the tree felling operations. Guide ropes shall be fixed as high up the tree trunk as possible to ensure that, when strain is exerted on the ropes, the tree drops in the correct position.

A wedge approximately 500mm above ground shall first be cut from the front face of the tree trunk in the direction of fall and while exerting strain on the guide ropes, a horizontal cut on the back face opposite the wedge shall be made.

The remaining stump shall be cut as low down to the ground as possible and herbicide painted on the cut face to prevent re-growth. The felled tree shall be cut in manageable sections for loading and transporting purposes.

(c) Fire breaks

Median and fenceline firebreaks shall be burned at the end of the growing season after the shoulder / general mow. The firebreaks shall be 5m wide. Median firebreaks shall be placed at approximately 200m intervals. Fenceline firebreaks shall be a continuous 5m wide strip adjacent to the fence where required. The burning of a fenceline firebreak shall only be done in areas identified by the Employer's Agent and on direct instruction from the Employer's Agent.

Generally, the burning of median and fenceline firebreaks shall be undertaken when the grass in the median is dry and less than 150mm tall and when there is little or no wind. The grass on both sides of the proposed fire break shall be well wetted to prevent the fire from spreading beyond the demarcated area and workmen with fire beaters or water hoses shall be in attendance to extinguish any runaway fires.

The burning of median and fenceline firebreaks shall be executed under strict supervision.

Any trees, hedge or shrubs adjacent to the firebreak shall be protected during the burning operation against singeing by using damp hessian screens.

Once the burning has been completed, the burnt area shall be doused with water to ensure that no further outbreak of fire will occur. Should a wind pick up during the burning operation, especially one that threatens to blow smoke across the road, all burning operations must cease immediately until suitable conditions return.

Fire warning signs together with any other required temporary road signs shall be erected on both carriageways prior to the burning of any firebreak.

Firebreaks in the form of mowing within the road reserve between fence and road will be only undertaken on instruction from the Employer's Agent. These firebreaks will consist of a 5m wide mow adjacent to the fenceline. All cut plant material shall be removed from site within one week of cutting. This mowing shall occur before assisting adjacent landowners with the burning of firebreaks on their property fenceline.

The Contractor shall indemnify the employer against all proceedings, claims, actions, damages and costs which may arise from or be related to the absence of improper control of fires during the burning of fire breaks.

In addition to the above the Contractor shall assist the landowners who wish to burn firebreaks within their property along the length of the roadway.

The Contractor shall conform to the regulations as set out in the VFFA of 1998 –Act No. 101.

All work executed in assisting the landowners with burning firebreaks as required by the Veld and Forest Fire Act is to be instructed by the Employer's Agent and will be paid for under Dayworks.

M6303 ACCEPTANCE CRITERIA

Eradication of undesirable vegetation shall be carried out as prescribed and to the satisfaction of the Employer's Agent.

Areas shall be left neat and tidy and all vegetation cuttings removed unless other means of disposal are agreed with by the Employer's Agent.

M6304 MEASUREMENT AND PAYMENT

Bidders shall note that rates tendered for items in this section shall be inclusive for all the necessary safety measures or additional labour, equipment and materials required for work adjacent to median barriers or within urban freeway medians.

M6300 REMOVAL OF UNDESIRABLE VEGETATION: PHYSICAL ERADICATION

Item	Unit
M630.01 Eradication of undesirable vegetation, tree felling and cutting branches	
(a) Initial eradication (State section and km distance incl. interchanges)	lump sum (LS)
(b) Annual eradication (State section and km distance incl. interchanges)	number (No)

The lump sum tendered for sub-item M630.01 (a) is for full compensation of the initial eradication of undesirable vegetation, tree felling and cutting branches as specified.

The unit of measurement for sub-item M630.01 (b), is the number of annual eradication per section and the rate tendered is for full compensation of all eradication of undesirable vegetation, tree felling and cutting branches required as specified.

The tendered rates shall include full compensation for all labour and equipment necessary for the cutting of vegetation to a height of 50mm – 100mm measured above the surrounding ground level, cutting of trees and branches including cutting trunks and branches into manageable sizes and painting all cut faces with herbicide where necessary, loading, off loading and spreading and hauling to an approved dump site.

Item	Unit
M630.02 Tree felling on instruction from the Employer's Agent	
(a) Girth 151mm to 500mm	number (No)
(b) Girth 501mm to 1 000mm	number (No)
(c) Girth 1 001mm to 2 000mm	number (No)
(d) Girth 2 001mm to 4 000mm	number (No)
(e) Larger than 4 000mm	number (No)

The unit of measurement shall be the number of trees felled within the above girth ranges measured at 1.0m above ground.

The tendered rates shall include full compensation for providing all plant, equipment and labour required for cutting down trees, including cutting trunks and branches into manageable sizes for transporting purposes, and painting the cut faces with herbicide where required, and for loading the material.

Item	Unit
M630.03 Burning of fire breaks per operation	
(a) 5m wide fire breaks in median (State section and km distance incl. interchanges)	number (No)
(b) 5m wide fire breaks from road reserve fence to road reserve fence (excluding median fire breaks) (State section and km distance incl. interchanges)	number (No)
(c) 5m wide fire breaks next to road reserve fence	kilometre (km)

The unit of measurement shall for sub-item M630.03 (a) and (b) be the number of fire break operations on sections as specified and shall include full compensation for all equipment, transport and labour required to burn the fire breaks at specified intervals, including protective measures against fire damage to established shrubs and hedges and for providing and erecting fire warning signs on both carriageways.

The unit of measurement for sub-item M630.03 (c) shall be the actual kilometre of 5m wide fire break executed as specified and shall include full compensation for all equipment, transport and labour required to burn the fire breaks at specified intervals, including protective measures against fire damage to established shrubs and hedges and for providing and erecting fire warning signs on both carriageways.

Item	Unit
M630.04 Additional eradication of undesired vegetation ordered by the Employer's Agent hectare (ha)	

The unit of measurement shall be the hectare of additional eradication of undesired vegetation. The areas will be measured by dense hectare (the percentage of infestation per hectare). For payment the rate per hectare will be multiplied by the percentage infestation. The tendered rate shall also include full compensation for all labour and equipment necessary for the cutting of vegetation to a height of 50mm – 100mm measured above the surrounding ground level, cutting of trees and branches including cutting trunks and branches into manageable sizes and painting all cut faces with herbicide where necessary, loading, off loading and spreading and hauling to an approved dump site.

SERIES M9000 : DAYWORKS

SECTION M9100 : DAYWORKS SCHEDULE

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M9104 MEASUREMENT AND PAYMENT

M9101 SCOPE

This section covers the listing of daywork items for use in determining payment for work which cannot be quantified in specific units in the Schedule of Quantities, or work ordered by the Employer's Agent, during the construction period which was not foreseen at tender stage for which no applicable rate exists in the Schedule of Quantities.

M9102 ORDERING OF DAYWORK

No daywork shall be undertaken unless written authorisation has been obtained from the Employer's Agent.

M9103 WORK RESERVED FOR DAYWORKS

The following specific types of work regarding road maintenance is reserved for inclusion under dayworks and for payment under the relevant items in the dayworks schedule:

- (a) Installation of rumble strips
- (b) Installation of counting stations
- (c) Brooming of road surface at junctions or where required
- (d) Sheltering of animals
- (e) Dismantling of unauthorised structures including hawkers and squatters
- (f) Control and extinguishing of fires
- (g) Moving of New Jersey barriers
- (h) Moving of squatters under bridges and culverts
- (i) Removal of motor wrecks, automotive parts and stripped tyre treads where left in the road reserve other than such items as to be removed by the Contractor in terms of his obligations under the various other sections of these Specifications
- (j) Removal of obstructions from the road reserve
- (k) Clearing of waterway structures
- (l) Removal of illegal signs outside the road reserve.
- (m) Replacing of damaged facilities i.e. litter containers and tables and benches at laybays
- (n) Other (specify)

M9104 MEASUREMENT AND PAYMENT

Accommodation of traffic will not be paid separately and any cost associated with it must be included in the rates in Section M0500:

The following daywork items are applicable to dayworks and are included under the applicable section of the Schedule of Quantities:

M9100 DAYWORKS

Item	Unit
M910.01 Labour during normal work hours:	
(a) Unskilled	hour (h)

(b) Semi-skilled	hour (h)
(c) Skilled	hour (h)
(d) Ganger	hour (h)
(e) Flagmen	hour (h)

Item	Unit
------	------

M910.02 Labour outside normal working hours

(a) Outside normal working hours and Saturdays

(i) Unskilled	hour (h)
(ii) Semi-skilled	hour (h)
(iii) Skilled	hour (h)
(iv) Ganger	hour (h)
(v) Flagmen	hour (h)

(b) Sundays and public holidays

(i) Unskilled	hour (h)
(ii) Semi-skilled	hour (h)
(iii) Skilled	hour (h)
(iv) Ganger	hour (h)
(v) Flagmen	hour (h)

Item	Unit
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M910.03 Transport and equipment

(a) Tipper Trucks

(i) 3 to 5 ton capacity	hour (h)
(ii) More than 5 ton capacity	hour (h)

(b) Loader (0,5m ³ bucket)	hour (h)
(c) Grader (CAT 140 G or similar)	hour (h)
(d) Compactor (Bomag BW 90)	hour (h)
(e) Water truck (5 000 litre)	hour (h)

(f) Mechanical broom	hour (h)
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(g) Tractor-trailer combination (43kW, 3 ton min.)	hour (h)
--	----------

(h) Suitable truck/bus for transporting labourers (specify size)	hour (h)
--	----------

(i) Safety vehicle for pre-marking purposes	hour (h)
---	----------

(j) Compressor (air) including hoses and tools (specify size)	hour (h)
---	----------

(k) Dewatering pump including generators and accessories (specify size)	hour (h)
---	----------

(l) Mobile electric welding sets and accessories (specify size)	hour (h)
---	----------

(m) Cutting torch with mobile electric & oxy acetylene installation	hour (h)
---	----------

(n) Mobile concrete mixers (specify size)	hour (h)
---	----------

(o) Flat bed truck (specify size)	hour (h)
-----------------------------------	----------

(p) Light delivery vehicle (LDV)	hour (h)
----------------------------------	----------

(q) Centremount cranes (specify size)	hour (h)
---------------------------------------	----------

- (r) Portable generator set hour (h)
- (s) Establishment of loader (bucket 0,5m³) to site number (No)
- (t) Establishment of grader (CAT 140 G or similar) number (No)
- (u) Other (specify) ()

Item Unit

M910.04 Procurement of materials

- (a) Procurement of materials provisional sum (Prov Sum)
- (b) The Contractor's overhead charges and profit in respect of sub-item M910.04(a) percentage (%)

Item Unit

M910.05 Extra over item M910.03 for establishment, within 24 hours, of:

- (a) Tipper trucks
 - (i) 3 to 5 ton capacity number (No)
 - (ii) More than 5 ton capacity number (No)
- (b) Loader (0,5m³) bucket number (No)
- (c) Dewatering pump including generators and accessories (specify size) number (No)
- (d) Water truck (5000 litre) number (No)
- (e) Other (specify) ()

The unit of measurement for items M910.01, M910.02 and M910.03 shall be as the unit specified for the item of equipment or personnel. The tendered rates shall include for transport of personnel and equipment to and from site. Non-working hours for transport breakdown, lack of operator or any other reason shall not be measured.

The unit of measurement for sub-items M910.03 (s) and (t) shall be the number of times the equipment is established on site. Establishment shall be measured once for the same operation.

The unit of measurement for sub-item M910.04(a) shall be the amounts actually paid for the procurement of materials and shall be made in accordance with the provisions of General Conditions of Contract for Construction Works, 2015 2nd edition

The percentages tendered for sub-item M910.04 (b) shall be the percentage of the amounts actually paid for the procurement of materials as ordered under sub-item M910.04 (a) and shall be in full and final compensation in respect of the Contractor's handling costs, profit and all other charges in connection with the procurement and supply of the materials to the point of usage.

The payment for item M910.05 shall be paid for as an extra-over to the tendered rates under item M910.03 for the establishment of certain equipment within 24 hours of receiving an instruction from the Employer's Agent.

The tendered rates submitted for labour for items M910.01 and M910.02 should cover overhead charges and profit, site supervision, use of small hand tools and appliances, non-mechanical equipment and consumable stores.

The tendered rates for vehicles equipment for item M910.03 shall be an all-inclusive hire charge for the use of the vehicle and driver or equipment and operator.

Measurement shall only be for work instructed and directed by the Employer's Agent, where the Employer's Agent considers no other appropriate rate is available in the Schedule of Quantities.

The tendered price shall include full compensation for all administrative, supervisory, operative and contingent costs and profit, relating to the running of the equipment or the supply of personnel and materials.

The calculation of compensation for daywork in terms of the General Conditions of Contract for Construction Works, 2015, 3rd edition shall not apply to daywork measured and paid for under the scheduled items, and no further than mark-up profit shall be added to the tendered rates.

Prior to the commencement of any work by the labourers described under items M910.01 and M910.02, the Contractor must obtain agreement from the Employer's Agent regarding the classification of all labourers in terms of "unskilled", "semi-skilled" and "skilled" labourers.

C3.4.3 PROJECT SPECIFICATIONS: ADDITIONAL SPECIFICATIONS

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PUBLIC WORKS, ROADS AND INFRASTRUCTURE

**Generic occupational health and safety specification for
construction work contracts**

September 2016

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PUBLIC WORKS, ROADS AND INFRASTRUCTURE

Generic occupational health and safety specification for construction work contracts

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Generic occupational health and safety specification for construction work contracts

1 Scope

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

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

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

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

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

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

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

2 Definitions

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

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

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

competent person: any person who:

- a) has in respect of the work or task to be performed the required knowledge, training and experience and, where applicable, qualifications specific to that work or task; and
- b) is familiar with the Act and applicable regulations made in terms of the Act

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

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

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

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

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

hazard: a source of or exposure to danger

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

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

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

healthy: free from illness or injury attributable to occupational causes

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

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

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

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

reasonably practicable: practicable having regard to:

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

risk: the probability that injury or damage will occur

safe: free from any hazard

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

structure:

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

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

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

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

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

3 Interpretation

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

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

4 Requirements

4.1 General requirement

The contractor shall:

- a) create and maintain as reasonably practicable a safe and healthy work environment,
- b) execute the work in a manner that complies with all the requirements of the Act and all its associated regulations, and in so doing, minimize the risk of incidents occurring;
- c) conspicuously display any site specific number assigned to the construction site in terms of the Construction Regulations 2014 at the main entrance to the site; and
- d) respond to the notices issued by the employer's health and safety agent as follows:
 - 1) Improvement Notice: improve health and safety performance over time so that repeat notices are not issued;
 - 2) Contravention Notice: rectify contravention as soon as possible;

3) Prohibition Notice: terminate affected activities with immediate effect and only recommence activities when it is safe to do so.

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

4.2 Administration

4.2.1 Notification of intention to commence construction work

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

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

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

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

4.2.2 Copy of the Act

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

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

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

4.2.4 Emergency procedures

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

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

4.2.4.2 The contractor shall within 24 hours of an emergency taking place notify the employer's health and safety agent in writing of the emergency and briefly outline what happened and how it was dealt with.

4.2.5 Health and safety file

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

- a) the following documents which shall be placed in the file prior to commencing with physical construction activities
 - 1) copy of the contraction work permit issued in terms of the Construction Regulations 2014;
 - 2) the contractor's health and safety policy, signed by the chief executive officer, which outlines the contractor's objectives and how they will be achieved and implemented by the contractor;
 - 3) copies of all risk assessments that were conducted
 - 4) the notification made to the Provincial Director of Labour, and if relevant, the notification of the person who supplies or contracts or agrees to supply electricity to that electrical installation;
 - 5) the letters of appointment, as relevant, together with a brief curricula vita (CV) of:
 - the construction manager and any assistant construction managers;
 - the construction health and safety manager
 - the construction health and safety officer
 - the risk assessor who is tasked to perform the risk assessments; and
 - the registered person responsible for the electrical installation covered by the Electrical Installations Regulations;
 - the authorised persons responsible for gas appliances, gas system gas reticulation system covered by the Pressure Equipment Regulations;
 - 6) a copy of the certificate of registration of the registered person responsible for the electrical installation covered by the Electrical Installations Regulations;
 - 7) the approval of the design of the part of an electrical installation which has a voltage in excess of 1 kV by a person deemed competent in terms of the Electrical Installations Regulations;

- 8) proof of registration of the electrical contractor who undertakes the electrical installation in terms of the Electrical Installations Regulations;
- 9) the preliminary hazard identification undertaken by a competent person;
- 9) the organogram which outlines the roles of the construction supervisor's assistants and safety officers; and
- 10) the contractor's health and safety plan;
- 11) the emergency procedures;
- 12) the procedure for the issuing and replacement of lost, stolen, worn or damaged personal protective clothing and equipment; and
- 13) proof that the contractor and all the subcontractors are registered and in good standing with the compensation fund or with a licensed compensation insurer relevant to the type of work performed;
- b) the following documents, as relevant, which shall be placed in the file after construction activities have commenced
 - 1) the letters of appointments, if relevant, together with a brief curricula vita (CV) of:
 - persons who are required to assist the construction supervisor;
 - construction supervisor for the site in respect of construction work covered by the Construction Regulations;
 - competent persons;
 - assistants of construction supervisor; and
 - designers of temporary works;
 - 2) any revisions to the organogram which outlines the roles of the construction supervisor's assistants and safety officers;
 - 3) each and every subcontract agreement and each and every subcontractor's approved health and safety plan;;
 - 4) proof that the every subcontractor is registered and in good standing with the compensation fund or with a licensed compensation insurer relevant to the type of work performed;
 - 5) proof of all subcontractor's induction training whenever it is conducted;
 - 6) copies of the minutes of the contractor's subcontractors health and safety meetings;
 - 7) copies of each of the contractor's subcontractors' health and safety policy, signed by the chief executive officer, which outlines the contractor's objectives and how they will be achieved and implemented by the contractor;
 - 8) the health and safety plans of all the contractor's subcontractors who are required to provide such plans;
 - 9) copies of the fall protection plan and each revision thereof;
 - 10) a comprehensive and updated list of all the subcontractors employed on site by the contractor, indicating the type of work being performed by such sub-contractors;
 - 11) the outcomes of the monthly audits for compliance with the approved health and safety plan of each and every sub-contractor working on the site;
 - 12) any report made to an inspector by the health and safety committee;
 - 13) the minutes of all health and safety meetings and any recommendations made to the contractor by the health and safety committee;
 - 14) the findings of all audit reports made regarding the implementation of the contractor's or a subcontractor's health and safety plan;
 - 15) the inputs of the safety officer, if any, into the health and safety plan;
 - 16) details of induction training conducted whenever it is conducted including the list of attendees;
 - 17) proof of the following where suspended platforms are used:
 - a certificate of system design issued by a professional engineer, professional certificated engineer or a professional engineering technologist;
 - proof of competency of erectors, operators and inspectors;
 - proof of compliance of operational design calculations with requirements of the system design certificate;
 - proof of performance test results;
 - sketches indicating the completed system with the operational loading capacity of the platform;
 - procedures for and records of inspections having been carried out;
 - procedures for and records of maintenance work having been carried out;
 - proof that the prescribed documentation has been forwarded to the provincial director;
 - 18) letters of appointments for competent persons to supervise the activities which law requires to be so supervised;
 - 19) a copy of risk assessments made by competent persons;
 - 20) records of the register of inspections made by a competent person immediately before and during the placement of concrete or any other load on formwork;
 - 21) the names of the first aiders on site and copies of the first aid certificates of competency;

- 22) the names of the persons the persons who are in possession of valid certificate of competency in first aid and copies of such certificates;
- 23) medical certificates of fitness for the contractor's and subcontractors' employees specific to the construction work to be performed and issued by an occupational health and safety practitioner;
- 24) details of all incidents together with the Contractor's investigative report on such incident;
- 25) the record of inspections carried out by the designers of structures to ensure compliance with designs; and
- 26) any other documentation required in terms of regulations issued in terms of the Act including a record of all drawings, designs, materials used and other similar information concerning the completed structure;.

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

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

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

4.2.6 Health and safety committee

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

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

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

4.2.6.3 The contractor shall ensure that minutes of the health and safety committee meetings are kept. The employer's health and safety agent shall be invited to attend such meetings as an observer.

4.2.7 Inspections, formal enquires and incidents

4.2.7.1 The contractor shall inform the relevant safety representative:

- a) beforehand of inspections, investigations or formal inquiries of which he has been notified by an inspector; and

- b) as soon as reasonably practicable of the occurrence of an incident on the site.

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

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

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

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

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

4.2.8 Personal protective equipment and clothing

The contractor shall ensure that:

- a) all workers are issued with the necessary personal protective clothing;
- b) all workers are identifiable at all times by having the company for which they work for printed on the back or front of their overalls; and

c) clear procedures are in place for the replacement of lost, stolen, worn or damaged personal protective clothing.

4.3 Appointments

4.3.1 Construction manager

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

4.3.2 Appointment of construction health and safety officers

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

4.3.3 Construction supervisors

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

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

4.3.4 Competent persons

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

- a) formwork and support work operations;
- b) excavation work;
- c) demolition work;
- d) scaffolding work operations;
- e) suspended platform work operations;
- f) material hoists;
- f) bulk mixing plants;
- g) temporary electrical installations;
- h) the stacking and storage of articles on the site; and
- i) fire equipment.

4.3.4.2 The contractor shall appoint in writing competent persons to:

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

4.3.5 Health and safety representatives

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

- a) review the effectiveness of health and safety measures;
- b) identify potential hazards and potential major incidents;
- c) in collaboration with his employer, examine the causes of incidents;
- d) investigate complaints by any employee of the contractor relating to that employee's health or safety on the site;
- e) make representations to the contractor on matters arising from a), b), c) or d) or on general matters affecting the health or safety of the employees at the workplace;
- g) inspect the site with a view to, the health and safety of employees, at regular intervals;
- h) participate in consultations with inspectors at the workplace and accompany inspectors on inspections of the workplace; and
- i) participate in any internal health or safety audit.

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

4.4 Employer's health and safety agent

4.4.1 The employer's health and safety agent shall:

- a) audit the contractor's compliance with the requirements of this specification prior to the commencement of any physical construction activities on the site;
- b) accept or reject the contractor's health and safety plans, giving reasons for rejecting such plans;
- c) monitor the effective implementation of all safety plans;
- d) conduct periodic and random audits on the health and safety file to establish compliance with the requirements of this specification;

e) visit the site at regular intervals to conduct site inspections, and based upon such visits issue, wherever necessary, Improvement Notices, Contravention Notices and Prohibition Notices, to the contractor or any of the contractor's subcontractors with a copy to the contract manager and, where relevant, to the contractor.

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

4.5 Creating and maintaining a safe and healthy work environment

4.5.1 General

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

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

4.5.1.2 The contractor shall ensure that:

- a) all reasonably practicable steps are taken to prevent the uncontrolled collapse of any new or existing structure or any part thereof, which may become unstable or is in a temporary state of weakness or instability due to the carrying out of construction work;
- b) no structure or part of a structure is loaded in a manner which would render it unsafe; and
- c) account of information, if any, provided by the designer of the structure is taken into account in the risk assessment;

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

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

4.5.2 Risk assessment

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

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

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

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

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

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

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

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

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

4.5.3 Health and safety plans

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

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

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

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

What are the hazards relating to work tasks? Who might be harmed and how? What are the safe work procedures for the site? What further

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

4.5.3.4 The contractor shall apply the approved health and safety plan from the date of its commencement and for the duration of the work to which this specification applies.

4.5.3.5 The contractor shall conduct periodic audits for compliance with the approved health and safety plan at intervals agreed upon with the employer's health and safety agent, but at least once every month.

4.5.3.6 The contractor shall review and update the health and safety plan whenever changes to the works are brought about or following the occurrence on an incident.

4.5.4 Responsibilities towards employees and visitors

4.5.4.1 The contractor shall as far as is reasonably practicable, cause every employee to be made conversant with the hazards to his health and safety attached to any work which he has to perform, any article or substance which he has to produce, process, use, handle, store or transport and any plant or machinery which he is required or permitted to use, as well as with the precautionary measures which should be taken and observed with respect to those hazards or safe work procedures.

4.5.4.2 The contractor shall ensure that all employees under his or her control and the employees of his subcontractors who are performing construction work are:

a) informed, instructed and trained by a competent person regarding any hazard and the related work procedures before any work commences, and thereafter at such times as may be determined in the risk assessment; and

b) issued with proof of health and safety induction training issued by a competent person and carry proof of such induction when working on site.

4.5.4.3 The contractor shall cause a record of training to be kept which indicates the training dates, the names, identity numbers and job description of all those who attended such training and the name, identity number and competence of the person who provided the training..

4.5.4.4 The contractor shall not allow or permit any employee to enter the site, unless such person has undergone health and safety induction training pertaining to the hazards prevalent on the site at the time of entry.

4.5.4.5 The contractor shall ensure that each visitor to a construction site, save where such visitor only visits the site office and is not in direct contact with the construction work activities:

a) undergoes health and safety instruction pertaining to the hazards prevalent on the site; and

b) is provided with the necessary personal protective equipment.

4.5.4.6 The contractor shall provide suitable on-site signage to alert workers and visitors to health and safety requirements. Such signage shall include but not be limited to:

a) unauthorized entrance prohibited;

b) signage to indicate what personal protective equipment is to be worn; and

c) activity related signs.

4.5.4.7 The contractor shall not permit any person who is or who appears to be under the influence of intoxicating liquor or drugs, to enter or remain at a workplace.

4.5.5 Subcontractors

4.5.5.1 The contractor may only subcontract work in terms of a written subcontract and shall only appoint a subcontractor should he be reasonably satisfied that such a subcontractor has the necessary competencies and resources to safely perform the work falling within the scope of the contract. Such a subcontract shall require that the subcontractor:

a) co-operate with the contractor as far as is necessary to enable both the contractor and sub-contractor to comply with the provisions of the Act; and

b) as far as is reasonably practicable, promptly provide the contractor with any information which might affect the health and safety of any person at work carrying out work or any person who might be affected by the work of such a person at work or which might justify a review of the health and safety plan.

4.5.5.2 The contractor shall provide any sub-contractor who is submitting a tender or appointed to perform a sub-contract falling within the scope of the contract, with the relevant sections of this specification and the health and safety specification.

4.5.5.3 The contractor shall discuss and negotiate with each subcontractor performing construction work the subcontractor's health and safety plan and approve that plan for implementation.

4.5.5.4 The contractor shall take reasonable steps as are necessary to ensure that:

a) potential contractors submitting tenders have made sufficient provision for health and safety measures during the construction process;

b) each subcontractor is registered and in good standing with the compensation fund or with a licensed compensation insurer prior to their performance of work on site;

c) all the subcontractor's employees have a valid medical certificate of fitness specific to the construction work which are to be performed which is issued by an occupational health and safety practitioner;

d) all sub-contractors co-operate with each other to enable each of those sub-contractors to comply with the requirements of the Act and associated regulations;

e) each subcontractor performing construction work has and maintains a health and safety file containing the relevant information described in 4.2.5; and

f) each sub-contractor's health and safety plan is implemented and maintained.

4.5.5.5 The contractor shall conduct periodic document verifications and audits for compliance with the approved health and safety plan of each and every sub-contractor working on the site at intervals agreed upon with such subcontractors, but at least once per month.

4.5.5.6 The contractor shall stop any subcontractor from executing construction work which is not in accordance with the contractor's or subcontractor's health and safety plan for the site or which poses a threat to the health and safety of persons.

4.5.5.7 The contractor shall ensure that where changes to the works occur including design changes, sufficient health and safety information and appropriate resources are made available to subcontractor to execute the work safely.

4.5.5.8 The contractor shall ensure that:

a) every subcontractor is registered and in good standing with the compensation fund or with a licensed compensation insurer prior to work commencing on site;

- b) potential subcontractors submitting tenders have made provision for the cost of health and safety measures during the construction process; and
- c) every subcontractor has in place a documented health and safety plan prior to commencing any work onsite which falls within the scope of the contract.

4.5.5.9 The contractor shall receive, discuss and approve health and safety plans submitted by subcontractors.

4.5.5.10 The contractor shall ensure that all subcontractors are informed regarding any hazard as stipulated in the risk assessment before any work commences, and thereafter at such times as may be determined in the risk assessment.

4.5.5.11 The contractor shall reasonably satisfy himself that all employees of subcontractors are informed, instructed and trained by a competent person regarding any hazard and the related work procedures before any work commences, and thereafter at such times as may be determined in the risk assessment.

4.5.5.12 The contractor shall satisfy himself and ensure that all subcontractor employees deployed in the site are:

- a) informed, instructed and trained by a competent person regarding any hazard and the related work procedures before any work commences, and thereafter at such times as may be determined in the risk assessment; and
- b) issued with proof of health and safety induction training issued by a competent person and carry proof such induction when working on site.

4.5.5.13 The contractor shall undertake a risk assessment together with subcontractors whenever subcontractors are working in close proximity to other subcontractors particularly activities involve excavations, the moving of earth, the movement of heavy machinery and working at heights.

4.5.6 First aid, emergency equipment and procedures

4.5.6.1 The contractor shall where more than five employees are employed at a workplace, provide a first aid box or boxes at or near the workplace which shall be available and accessible for the treatment of injured persons at that workplace. Such first aid boxes shall contain suitable first aid equipment which includes the items listed in the General Safety Regulations issued in terms of the Act.

4.5.6.2 The contractor shall ensure that where there are more than 10 employees employed on the site that for every group of up to 50 employees at that workplace, at least one person is readily available during normal working hours, who is in possession of a valid certificate of competency in first aid.

4.5.7 Facilities for workers

4.5.7.1 The contractor shall provide and keep clean and fit for use at or within reasonable access of the site:

- a) at least one shower facility for every 15 workers;
- b) at least one sanitary facility for every 30 workers;
- c) changing facilities for each gender; and
- d) sheltered eating areas.

4.5.7.2 A contractor shall provide reasonable and suitable living accommodation for the workers at construction sites which are remote from their homes and where adequate transportation between the site and their homes, or other suitable living accommodation, is not available.

4.6 Design of temporary work

The contractor shall:

- a) provide the health and safety agent with the names and contract particulars of the designers involved in the design of temporary works;
- b) issue the designers with a copy of the health and safety specification as well as any pertinent information contained in the contract; and ..
- c) provide the health and safety agent with certificates issued by the designer of the temporary works that such works are fit for purpose before such works are used in support construction activities.

Annexure A: Incorporating this specification in procurement documents

A1 The Occupational Health and Safety Act of 1993 (Act No. 181 of 1993) requires amongst other things that every employer provide and maintain, as far as is reasonably practicable, a working environment that is safe and without risk to the health of his employees (see section 8). The Act holds the employer liable for acts of omission of employees or mandataries (i.e. agents, contractors, or a subcontractor) unless it is proved that permission was not given to the employee or mandatory to act or fail to act in a manner which has obviously resulted in the flouting of the law, the employee or mandatory was acting outside the scope of his or her authority and that the questionable conduct of the employee or mandatory was not a condition laid down by the employer and the employer took reasonable steps to prevent the questionable / unlawful conduct of the employee or mandatory (see Section 37 of the Act). The employer can be relieved of this liability if the mandatory enters in writing into an agreement with the employer which sets out the arrangements and procedures to ensure compliance by the mandatory with the provisions of the Act.

A2 The Construction Regulations 2014 require employers (clients) to enter into written agreements with contractors (principle contractors). These Regulations are specifically designed to ensure that inter-action between the various role players takes place in construction work. The employer is required to, amongst other things:

- a) provide the contractor with a documented health and safety specification for the construction work;
 - b) provide the contractor with information which can affect the health and safety of anyone carrying out the construction work;
 - c) take reasonable steps including periodic audits to ensure that the contractor implements and maintains his or her health and safety plan;
 - d) stop where necessary any work which is not in accordance with the health and safety plan;
 - e) ensure that tenderers have made provision for health and safety measures in the construction process; and
 - f) discuss, negotiate and approve health and safety plans produced by the contractor.
- The employer may, however, appoint an agent to act as his or her representative and where such an appointment is made, the responsibilities as are imposed by the regulations upon an employer, as far as reasonably practicable, are imposed upon the agent.

A3 The designer of a structure is required to provide the employer with all relevant information about the structure which can affect the pricing of the structure, inform the contractor in writing of any known or anticipated dangers or hazards relating to the construction work and make available to the contractor all relevant information required for the safe execution of the work, geotechnical information, structural design loads and methods and sequence of construction.

A4 The National Treasury Standard for Infrastructure Procurement and Delivery Management requires that procurement documents be compiled in accordance with the provisions of SANS 10845-2, Construction procurement – Part 2: Formatting and compilation of procurement documents. This standard requires that procurement documents comprise a number of component documents including the:

- a) scope of work i.e. the document that specifies and describes the goods, services, or engineering and construction works which are to be provided and any other requirements and constraints relating to the manner in which the contract work is to be performed
- b) site information i.e. the document that describes the site as at the time of tender, to enable the tenderer to price his tender and to decide upon his method of working and programming

A5 Occupational health and safety is a constraint relating to the manner in which the contract work is to be performed. The scope of work needs to identify the high level package specific hazards identified by the employer and communicate to the contractor any information which can affect the health and safety of anyone carrying out the construction work and can influence the pricing of the contract. It should also contain information provided by the designer of structures relating to any known or anticipated dangers or hazards relating to the construction work and all relevant information required for the safe execution of the work, geotechnical information, structural design loads and methods and sequence of construction if not shown on the construction drawings. It also needs to incorporate by reference this specification.

A6 Package specific information such as geotechnical information and existing buildings containing asbestos products should be included in the site information.

A7 It is recommended that the wording in the example be included in the scope of work of all contracts involving work falling within the following the following definition of construction work that is provided in the Construction Regulations:

any work in connection with:

- the construction, erection, alteration, renovation, repair, demolition or dismantling of or addition to a building or similar structure
- the construction, erection, maintenance, demolition or dismantling of any bridge, dam, canal, road, railway, runway, sewer or water reticulation system or the moving of earth, clearing of land, the making of excavation, piling or any similar civil engineering structure or type of work

Example:

Health and Safety

The major hazards identified by the Employer are

The site specific health and safety specification for the intended construction work, based on the baseline risk assessment is contained in Annexure

The Contractor shall demonstrate compliance with the requirements of the Occupational Health and Safety Act of 1993 and manage the risk of health and safety incidents in the execution of the contract in accordance with the provisions of National Treasury's Occupational Health and Safety Specification for Construction Work Contracts. The Employer's health and safety agent shall interact with the Contractor in accordance with the provisions of this specification.

C3.4.3.2 HIV/AIDS

SPECIFICATION

SECTION

HIV/AIDS SPECIFICATION

HIV/AIDS REQUIREMENTS

1 SCOPE

This specification contains all requirements applicable to the Contractor for creating HIV/AIDS awareness amongst all of the Workers involved in this project for the duration of the construction period, through the following strategies:

- Raising awareness about HIV/AIDS through education and information on the nature of the disease, how it is transmitted, safe sexual behaviour, attitudes towards people affected and people living with HIV/AIDS, how to live a healthy lifestyle with HIV/AIDS, the importance of voluntary testing and counselling, the diagnosis and treatment of Sexually Transmitted Infections and the closest health Service Providers;
- Informing Workers of their rights with regard to HIV/AIDS in the workplace;
- Providing Workers with access to condoms and other awareness material that will enable them to make informed decisions about sexual practices.

2 DEFINITIONS AND ABBREVIATIONS

2.1 Definitions

Service Provider: The natural or juristic person recognized and approved by the Department of Public Works as a specialist in conducting HIV/AIDS awareness programmes.

Service Provider Workshop Plan: A plan outlining the content, process and schedule of the training and education workshops, presented by a Service Provider which has been approved by the Representative/Agent.

Worker: Person in the employ of the Contractor or under the direction or supervision of the Contractor or any of his Sub-contractors, who is on site for a minimum period of 30 days in all.

2.2 Abbreviations

HIV : Human Immunodeficiency Virus.

AIDS : Acquired Immune Deficiency Syndrome.

STI : Sexually Transmitted Infection.

3 BASIC METHOD REQUIREMENTS

3.1 The Contractor shall, through a Service Provider, conduct onsite workshops with the Workers.

The Service Provider shall develop and compile a Service Provider Workshop Plan to be presented at the workshops and which will be best suited for this project to achieve the specified objectives with regard to HIV/AIDS awareness.

The Service Provider Workshop Plan shall be based on the following information provided by the Contractor:

- Number of Workers and Sub-contractors on site;
- When new Workers or Sub-contractors will join the construction project;

- Duration of Workers and Sub-contractors on site;
- How the maximum number of Workers can be targeted with workshops;
- How the Contractor prefers workshops to be scheduled, e.g. three hourly sessions per Worker, or one 2.5 hour workshop per Worker;
- Profile of Workers, including educational level, age and gender (if available);
- Preferred time of day or month to conduct workshops;
- A Gantt chart reflecting the construction programme, for scheduling of workshops;
- Suitable venues for workshops.

The Contractor shall submit the Service Provider Workshop Plan for approval within 21 days after the tender acceptance date. After approval by the Representative/Agent, the Contractor shall make available a suitable venue that will be conducive to education and training.

3.2 The Service Provider Workshop Plan shall address, but will not be limited to the following:

3.2.1 The nature of the disease;

3.2.2 How it is transmitted;

3.2.3 Safe sexual behavior;

3.2.4 Post exposure services such as voluntary counselling and testing (VCT) and nutritional plans for people living with HIV/AIDS;

3.2.5 Attitudes towards other people with HIV/AIDS;

3.2.6 Rights of the Worker in the workplace;

3.2.7 How the Awareness Champion will be equipped prior to commencement of the HIV/AIDS awareness programme with basic HIV/AIDS information and the necessary skills to handle questions regarding the HIV/AIDS awareness programme on site sensitively and confidentially;

3.2.8 How the Service Provider will support the Awareness Champion;

3.2.9 Location and contact numbers of the closest clinics, VCT facilities, counselling services and referral systems;

3.2.10 how the workshops will be presented, including frequency and duration;

3.2.11 how the workshops will fit in with the construction programme;

3.2.12 how the Service Provider will assess the knowledge and attitude levels of attendees to structure workshops accordingly;

3.2.13 how the video will be used;

3.2.14 how the Service Provider will elicit maximum participation from the Workers;

3.2.15 a questions and answers slot (interactive session).

The Service Provider Workshop Plan shall encompass the Specific Learning Outcomes (SLO) as stipulated.

4 HIV/AIDS AWARENESS EDUCATION AND TRAINING

4.1 Workshops

The Contractor shall ensure that all Workers attend the workshops.

The workshops shall adequately deal with all the aspects contained in the Service Provider Workshop Plan. A video of HIV/AIDS in the construction industry, which can be obtained from all Regional Offices of the Department of Public Works, is to be screened to Workers at workshops. In order to enhance the learning experience, groups of not exceeding 25 people shall attend the interactive sessions of the workshops.

4.2 Recommended practice

4.2.1 Workshop Schedule

Presenting information contained in the Service Provider Workshop Plan can be divided in as many workshop sessions as deemed practicable by the Contractor, provided that all Workers are exposed to all aspects of the workshops as outlined in the Service Provider Workshop Plan.

Breaking down the content of information to be presented to Workers into more than one workshop session however, has the added advantage that messages are reinforced over time while providing opportunity between workshop sessions for Workers to reflect and test information. Workers will also have an opportunity to ask questions at a following session.

4.2.2 Service Providers

A database of recommended Service Providers is available from all Regional Offices of the Department of Public Works.

4.2.3 HIV/AIDS Specific Learning Outcomes and Assessment Criteria

Workers shall be exposed to workshops for a minimum duration of two-and-a-half hours. In order to set a minimum standard requirement, the following specific learning outcomes and assessment criteria shall be met.

4.2.3.1 UNIT 1: The nature of HIV/AIDS

After studying and understanding this unit, the Worker will be able to differentiate between HIV and AIDS and comprehend whether or not it is curable. The Worker will also be able to explain how the HI virus operates once a person is infected and identify the symptoms associated with the progression of HIV/AIDS.

Assessment Criteria:

1. Define and describe HIV and AIDS;
2. List and describe the progression of HIV/AIDS.

4.2.3.2 UNIT 2: Transmission of the HI virus

After studying and understanding this unit, the Worker will be able to identify bodily fluids that carry the HI virus. The Worker will be able to recognise how HIV/AIDS is transmitted and how it is not transmitted.

Assessment Criteria:

1. Record in what bodily fluids the HI virus can be found;
2. Describe how HIV/AIDS can be transmitted;
3. Demonstrate the ability to distinguish between how HIV/AIDS is transmitted and misconceptions around transmittance of HIV/AIDS.

4.2.3.3 UNIT 3: HIV/AIDS preventative measures

After studying and understanding this unit, the Worker will comprehend how to act in a way that would minimize the risk of HIV/AIDS infection and to use measures to prevent the HI virus from entering the bloodstream.

Assessment Criteria:

1. Report on how to minimize the risk of HIV/AIDS infection;

2. Report on precautions that can be taken to prevent HIV/AIDS infection;
3. Explain or demonstrate how to use a male and female condom;
4. List the factors that could jeopardize the safety of condoms provided against HIV/AIDS Transmission.

4.2.3.4 UNIT 4: Voluntary HIV/AIDS counselling and testing

After studying and understanding this unit, the Worker will be able to recognise methods of testing for HIV/AIDS infection. The Worker will be able to understand the purpose of voluntary HIV/AIDS testing and pre- and post-test counseling.

Assessment Criteria:

1. Describe methods of testing for HIV/AIDS infection;
2. Report on why voluntary testing is important;
3. Report on why pre- and post-test counselling is important.

4.2.3.5 UNIT 5: Living with HIV/AIDS

After studying and understanding this unit, the Worker will be able to recognise the importance of caring for people living with HIV/AIDS and be able to manage HIV/AIDS.

Assessment Criteria:

1. List and describe ways to manage HIV/AIDS;
2. Describe nutritional needs of people living with HIV/AIDS;
3. Describe ways to embrace a healthy lifestyle as a person living with HIV/AIDS;
4. Explain the need for counselling and support to people living with HIV/AIDS.

4.2.3.6 UNIT 6: Treatment options for people with HIV/AIDS

After studying and understanding this unit, the Worker will be familiar with the various treatments available to HIV/AIDS infected or potentially HIV/AIDS infected people.

Assessment Criteria:

1. Discuss anti-retroviral therapy;
2. List methods of treatment to prevent HIV/AIDS transmission from mother-to-child;
3. Describe the need for treatment of opportunistic diseases for people living with HIV/AIDS;
4. Describe post exposure prophylactics.

4.2.3.7 UNIT 7: The rights and responsibilities of Workers in the workplace with regard to HIV/AIDS

After studying and understanding this unit, the Worker will be able to identify the rights and responsibilities of the Worker living with HIV/AIDS in the workplace. The Worker will recognise the importance of accepting colleagues living with HIV/AIDS and treating them in a non-discriminative way.

Assessment Criteria:

1. Discuss the rights of a person living with HIV/AIDS in the workplace;
2. Discuss the responsibilities of a person living with HIV/AIDS in the workplace;
3. Report on why acceptance and non-discrimination of colleagues living with HIV/AIDS is important.

4.3 Displaying of plastic laminated posters and distribution of information booklets

The Contractor shall obtain a set of four laminated posters conveying different key messages and information booklets. The contractor should include the costs of posters and information booklets in his/her tender price.

The above-mentioned posters and information booklets have been prepared to raise awareness and to share information about HIV/AIDS and STI's.

Posters or display stands shall be displayed on site as soon as possible, but not later than 14 days after the date of site handover.

Posters shall be displayed in areas highly trafficked by Workers, including toilets, rest areas, the site office and compounds.

The posters on display must always be intact, clear and readable.

Information booklets must be distributed to all Workers as soon as possible, but not later than 14 days after site handover, or as soon as the Worker joins the site.

5 PROVIDING WORKERS WITH ACCESS TO CONDOMS

The Contractor shall provide and maintain condom dispensers and make both male and female condoms, complying with the requirements of SABS ISO 4074, available at all times to all Workers at readily accessible points on site, for the duration of the contract. The Contractor may obtain condom dispensers from the Department of Health and condoms may be obtained from the Local Clinic or the Department of Health.

At least one male and one female condom dispenser and a sufficient supply of condoms, all to the approval of the Representative/Agent, shall be made available on site within 14 days of site hand over. Contractors should note that arrangements to obtain condoms from the Department of Health Clinics prior to site hand over may be necessary, to ensure that condoms are available within 14 days of site handover.

Condoms shall be made available in areas highly trafficked by Workers, including toilets, the site office and compounds.

6 ENSURING ACCESS TO HIV/AIDS TESTING AND COUNSELLING FACILITIES AND TREATMENT OF SEXUALLY TRANSMITTED INFECTIONS (STI)

The Contractor shall provide Workers with the names of the closest Service Providers that provide HIV/AIDS testing and counselling and Clinics providing Sexually Transmitted Infection (STI) diagnosis and treatment. Information on these Service Providers and Clinics must be displayed on a poster of a size not smaller than A1 in an area highly trafficked by Workers.

7 APPOINTMENT OF AN HIV/AIDS AWARENESS CHAMPION

7.1 Within 14 days of site handover the Contractor shall appoint an Awareness Champion from amongst the Workers, who speaks, reads and writes English, who speaks and understands all the local languages spoken by the Workers and who shall be on site during all stages of the construction period. The Contractor shall ensure that the Awareness Champion has been trained by the Service Provider on basic HIV/AIDS information, the support services available and the necessary skills to handle questions regarding the HIV/AIDS programme in a sensitive and confidential manner.

7.2 The Awareness Champion shall be responsible for:

7.2.1 Liaising with the Service Provider on organising awareness workshops;

7.2.2 Filling condom dispensers and monitoring condom distribution;

7.2.3 Handing out information booklets;

7.2.4 Placing and maintaining posters.

8 MONITORING

The Contractor shall grant to the Representative/Agent reasonable access to the construction site, in order to establish that the Contractor complies with his obligations regarding HIV/AIDS awareness under this contract.

The Contractor must report problems experienced in implementing the HIV/AIDS requirements to the Representative/Agent. The attached SITE CHECKLIST (SCHEDULE A) shall be completed and submitted at every construction progress inspection to the Representative/Agent.

The attached SERVICE PROVIDER REPORT (SCHEDULE B) shall be completed and submitted on a monthly basis to the Department's Project Manager, through the Representative/Agent.

The attached CONTRACTOR HIV/AIDS PROGRAMME REPORT (SCHEDULE C), a close out programme report, shall be completed by the Contractor at the end of the contract.

SCHEDULE A

HIV/AIDS PROGRAMME: SITE CHECKLIST

When did construction commence: _____

Name of Departmental Project Manager: _____

Please refer to HIV/AIDS Programme activities during the reporting period

Tick the block if Contractor satisfactorily complied with specifications																								
Programme implemented within 14 days of site handover	PI				PI				PI				PI				PI				PI			
	D	D	M	M	D	D	M	M	D	D	M	M	D	D	M	M	D	D	M	M	D	D	M	M
Awareness champion on site																								
HIV/AIDS awareness service provider report																								
Male condom dispenser																								
Sufficient male condoms available																								
Male condom dispenser in a highly trafficked area																								
Female condom dispenser																								
Sufficient female condoms available																								
Female condom dispenser in a highly trafficked area																								
All four types of posters displayed																								
Posters in a good condition																								
Posters in a highly trafficked area																								
Posters displayed on local support services: clinic & VCT Centre																								
Support service poster/s in highly trafficked area																								
Support service poster/s in a good condition																								

Please indicate the applicable number for the reporting period							
Workers on payroll (at PI)							
Sub-Contractors who will be on site for longer than 30 days (at PI)							
Workshop attendees							

Number of workshops held							
Scheduled workshops according to approved workshop plan							
Booklets distributed							
Male condoms distributed							
Female condoms distributed							

Representative/Agent

Date

Contractor

Date

SCHEDULE A

Date of progress inspection: (ccyy/mm/dd)

Reporting period: (ccyy/mm/dd) _____ to (ccyy/mm/dd) _____

Deviations from HIV/AIDS awareness programme plan:

Corrective actions:

Representative/Agent

Departmental Project Manager

Date

Date

SCHEDULE B

HIV/AIDS AWARENESS PROGRAMME: SERVICE PROVIDER REPORT

Reporting period: (ccyy/mm/dd) _____ to (ccyy/mm/dd) _____

Number of workshops conducted in reporting period: _____

Number of scheduled workshops according to approved workshop plan: _____

Deviations from workshop plan:

State reasons for deviating from workshop plan:

Corrective actions:

Service Provider

Date

SCHEDULE B

HIV/AIDS AWARENESS PROGRAMME : WORKSHOP CONTENT ADDRESSED

Fill in the applicable information with regard to each workshop conducted																												
DATE	W/S				W/S				W/S				W/S				W/S				W/S							
	D	D	M	M	D	D	M	M	D	D	M	M	D	D	M	M	D	D	M	M	D	D	M	M	D	D	M	M
Content of workshop: (Mark the content included)																												
SLO1																												
SLO3																												
SLO4																												
SLO5																												
SLO6																												
SLO7																												
SLO1																												
HIV/AIDS in construction video																												
Indicate the duration of the workshop in hours																												
Total number of Workers																												
Indicate workshop venue																												

SCHEDULE B

HIV/AIDS AWARENESS PROGRAMME: ATTENDANCE REGISTER

Fill in your name and indicate attendance by ticking the appropriate date																					
DATE		W/S		W/S		W/S		W/S		W/S		W/S									
		D	D	M	M	D	D	M	M	D	D	M	M	D	D	M	M	D	D	M	M
No.	NAMES																				

SCHEDULE C

CONTRACTOR HIV/AIDS PROGRAMME REPORT

Project name: _____

Project Location: _____

Contract value of project: R _____

Department of Public Works Project Manager: _____

HIV/AIDS Programme duration: (ccyy/mm/dd) _____ to (ccyy/mm/dd) _____

AWARENESS MATERIAL

Describe location of posters displayed during the programme: _____

Comments on posters: _____

Indicate total number of booklets distributed: _____

Comments on booklets: _____

CONDOMS

Indicate total number of male condoms distributed: _____

Indicate total number of female condoms distributed: _____

Describe where male condom dispenser was placed: _____

Describe where female condom dispenser was placed: _____

HIV/AIDS WORKSHOPS

Indicate the total number of HIV/AIDS workshops conducted: _____

Indicate the duration of workshops: _____

Indicate the total number of Workers that participated in the HIV/AIDS workshops: _____

Indicate the total number of Workers that were exposed to the video on HIV/AIDS in the Construction Industry:

Comments on HIV/AIDS workshops on site: _____

SCHEDULE C

GENERAL

Briefly describe programme activities and satisfaction with outcome: _____

Additional comments, suggestions or needs with regard to the HIV/AIDS awareness programmes on site:

Please indicate if your company has a formal HIV/AIDS policy focusing on HIV/AIDS awareness raising and care and support of HIV/AIDS Workers:

Yes	No	Currently developing one
-----	----	--------------------------

Please indicate if, to your knowledge, you have lost any workers during the duration of the project to HIV/AIDS related sicknesses. One or more of the following might indicate an HIV/AIDS related death:

- | | | |
|-----------------------|------------------------|-------------|
| Excessive weight loss | Coughing or chest pain | Vomiting |
| Reactive TB | Pain when swallowing | Meningitis |
| Hair loss | Persistent fever | Memory loss |
| Severe tiredness | Diarrhoea | Pneumonia |

Number of HIV/AIDS-related deaths: _____

Contractor

Date

Departmental Project Manager

Date

C3.4.3.3 ENVIRONMENTAL MANAGEMENT PLAN

CONTENTS

C3.4.3.3.1	SCOPE
C3.4.3.3.2	DEFINITIONS
C3.4.3.3.3	IDENTIFICATION OF ENVIRONMENTAL ASPECTS AND IMPACTS
C3.4.3.3.4	LEGAL REQUIREMENTS
C3.4.3.3.5	ADMINISTRATION OF ENVIRONMENTAL OBLIGATIONS
C3.4.3.3.6	TRAINING
C3.4.3.3.7	ACTIVITIES/ASPECTS CAUSING IMPACTS
C3.4.3.3.8	ENVIRONMENTAL MANAGEMENT OF CONSTRUCTION ACTIVITIES
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C3.4.3.3.1 SCOPE

This environmental management programme (EMP) sets out the methods by which proper environmental controls are to be implemented by the contractor. The duration over which the contractor's controls shall be in place cover the construction period of the project as well as the limited time after contract completion defined by the General Conditions of Contract, and the project specifications, as the defects notification period (maintenance period).

The provisions of this EMP are binding on the contractor during the life of the contract. They are to be read in conjunction with all the documents that comprise the suite of documents for this contract. In the event that any conflict occurs between the terms of the EMP and the project specifications or Record of Decision, the terms herein shall be subordinate.

The EMP is a dynamic document subject to similar influences and changes as are brought by variations to the provisions of the project specification. Any substantial changes shall be submitted to the Department of Public Works, Roads and Infrastructure in writing for approval.

The EMP identifies the following:

Construction activities that will impact on the environment.

Specifications with which the contractor shall comply in order to protect the environment from the identified impacts.

Actions that shall be taken in the event of non-compliance.

C3.4.3.3.2 DEFINITIONS

Alien Vegetation: alien vegetation is defined as undesirable plant growth which shall include, but not be limited to, all declared category 1 and 2 listed invader species as set out in the Conservation of Agricultural Resources Act (CARA) regulations. Other vegetation deemed to be alien shall be those plant species that show the potential to occupy in number, any area within the defined construction area and which are declared to be undesirable.

Construction Activity: a construction activity is any action taken by the contractor, his subcontractors, suppliers or personnel during the construction process as defined in the South African National Roads Agency Limited and National Roads Act, 1998 (Act No. 7, 1998)

Environment: environment means the surroundings within which humans exist and that could be made up of -

- the land, water and atmosphere of the earth;
- micro-organisms, plant and animal life;
- any part or combination of (i) and (ii) and the interrelationships among and between them; and
- the physical, chemical, aesthetic and cultural properties and conditions of the foregoing that influence human health and well-being.

Environmental Aspect: an environmental aspect is any component of a contractor's construction activity that is likely to interact with the environment.

Environmental Impact: an impact or environmental impact is the change to the environment, whether desirable or undesirable, that will result from the effect of a construction activity. An impact may be the direct or indirect consequence of a construction activity.

Record of Decision: a record of decision is a written statement from the Limpopo Department of Economic Development, Environment and Tourism, that records its approval of a planned undertaking to improve, upgrade or rehabilitate a section of road and the mitigating measures required to prevent or reduce the effects of environmental impacts during the life of a contract.

Road Reserve: the road reserve is a corridor of land, defined by co-ordinates and proclamation, within which the road, including access intersections or interchanges, is situated. A road reserve may, or may not, be bounded by a fence.

Road Width: for the purposes of the EMP, the road width is defined as the area within the road reserve i.e. fence line to fence line, but also includes all areas beyond the road reserve that are affected by the continuous presence of the road, e.g. a reach of a water course.

C3.4.3.3.3 IDENTIFICATION OF ENVIRONMENTAL ASPECTS AND IMPACTS

The contractor shall identify likely aspects before commencing with any construction activity. Examples of environment aspects include:

- waste generation

- stormwater discharge
- emission of pollutants into the atmosphere
- chemical use operations
- energy use operations
- water use operations
- use of natural resources
- noise generation

Thereafter the contractor shall programme his work in such a way that each cause and effect of a construction activity is also identified and the activity planned so as to prevent any impact from happening. If prevention is not practicable, or in the event of mishap or misapplication, the contractor shall provide plans and measures for the Employer's Agent's approval, which will limit and contain the magnitude, duration and intensity of the impact. The contractor shall demonstrate that he/she is capable of carrying out any repair and reinstatement of the damaged environment. These requirements shall be concurrent with the time constraints to produce an approved construction programme according to General Conditions of Contract for Construction works amended by Particular Condition of the general conditions of contract and clause B1204 of these project specifications. Listed below are some environmental impacts that could adversely alter an aspect of the environment through usual construction activities:

Pollution of atmosphere, soil or water

Destruction or removal of fauna and flora and effect on biological diversity

Deformation of the landscape

Soil erosion

Destruction of historical/heritage sites

Effect on the built environment

Effect on agricultural land and wetlands

General good construction practice will play an important role in avoiding the occurrence of an Impact. The contractor's attention is drawn, in this regard, to C1008. Environmental Management of Construction Activities

C3.4.3.3.4 LEGAL REQUIREMENTS

a) General

Construction will be according to the best industry practices, as identified in the project documents. This EMP, which forms an integral part of the contract documents, informs the contractor as to his duties in the fulfilment of the project objectives, with particular reference to the prevention and mitigation of environmental impacts caused by construction activities associated with the project. The contractor should note that obligations imposed by the EMP are legally binding in terms of environmental statutory legislation and in terms of the additional conditions to the general conditions of contract that pertain to this project. In the event that any rights and obligations contained in this document contradict those specified in the standard or project specifications then the latter shall prevail.

b) Statutory and other applicable legislation

The contractor is deemed to have made himself conversant with all legislation pertaining to the environment, including provincial and local government ordinances, which may be applicable to the contract.

C3.4.3.3.5 ADMINISTRATION OF ENVIRONMENTAL OBLIGATIONS

a) Appointment of a Designated Environmental Officer (DEO)

For the purposes of implementing the conditions contained herein, the contractor shall submit to the Employer's Agent for approval the appointment of a nominated representative of the contractor as the DEO for the contract. The request shall be given, in writing, at least fourteen days before the start of any work clearly setting out reasons for the nomination, and with sufficient detail to enable the Employer's Agent to make a decision. The Employer's Agent will, within seven days of receiving the request, approve, reject or call for more information on the nomination. Once a nominated representative of the contractor has been approved he/she shall be the DEO and shall be the responsible person for ensuring that the provisions of the EMP are complied with during the life of the contract. The Employer's Agent will be responsible for issuing instructions to the contractor where environmental considerations call for action to be taken. The DEO shall submit regular written reports to the Employer's Agent, but not less frequently than once a month.

The Employer's Agent shall have the authority to instruct the contractor to replace the DEO if, in the Employer's Agent's opinion, the appointed officer is not fulfilling his/her duties in terms of the requirements of the EMP or this specification. Such instruction will be in writing and shall clearly set out the reasons why a replacement is required.

There shall be an approved DEO on the site at all times.

b) Administration

Before the contractor begins each construction activity the DEO shall give to the Employer's Agent a written statement setting out the following:

The type of construction activity.

Locality where the activity will take place.

Identification of the environmental aspects and impacts that might result from the activity.

Methodology for impact prevention for each activity or aspect.

Methodology for impact containment for each activity or aspect.

Emergency/disaster incident and reaction procedures.

Treatment and continued maintenance of impacted environment.

The contractor may provide such information in advance of any or all construction activities provided that new submissions shall be given to the Employer's Agent whenever there is a change or variation to the original. The Employer's Agent may provide comment on the methodology and procedures proposed by the DEO, but he shall not be responsible for the contractor's chosen measures of impact mitigation and emergency/disaster management systems. However, the contractor shall demonstrate at inception and at least once during the contract that the approved measures and procedures function properly.

c) Good Housekeeping

The Contractor shall undertake "good housekeeping" practices during construction as stated in clause 1217 of the COLTO Standard Specifications for Roads and Bridges and subclauses of the General Conditions of Contract. This will help avoid disputes on responsibility and allow for the smooth running of the contract as a whole. Good housekeeping extends beyond the wise practice of construction methods that leaves production in a safe state from the ravages of weather to include the care for and preservation of the environment within which the site is situated.

C3.4.3.3.6 TRAINING

The designated environmental officer (DEO) must be conversant with all legislation pertaining to the environment applicable to this contract and must be appropriately trained in environmental management and must possess the skills necessary to impart environmental management skills to all personnel involved in the contract.

The contractor shall ensure that adequate environmental training takes place. All employees shall have been given an induction presentation on environmental awareness. Where possible, the presentation needs to be conducted in the language of the employees. The environmental training should, as a minimum, include the following:

- The importance of conformance with all environmental policies
- The environmental impacts, actual or potential, of their work activities;
- The environmental benefits of improved personal performance;
- Their roles and responsibilities in achieving conformance with the environmental policy and procedures and with the requirement of the Department's environmental management systems, including emergency preparedness and response requirements;
- The potential consequences of departure from specified operating procedures;
- The mitigation measures required to be implemented when carrying out their work activities.

In the case of permanent staff the contractor shall provide evidence that such induction courses have been presented. In the case of new staff (including contract labour) the contractor shall inform the Employer's Agent when and how he/she intends concluding his environmental training obligations.

C3.4.3.3.7 ACTIVITIES/ASPECTS CAUSING IMPACTS

A list of possible causes of environmental impacts that occur during construction activities is given in Table 7/1: Aspects or Activities that Cause Environmental Impacts during Construction Activities, which is to be found at the end of this part. This list is not exhaustive, and shall be used for guideline purposes only.

C3.4.3.3.8 ENVIRONMENTAL MANAGEMENT OF CONSTRUCTION ACTIVITIES

a) Site Establishment

i) Site Plan

The contractor shall establish his construction camps, offices, workshops, staff accommodation and testing facilities on the site in a manner that does not adversely affect the environment. However, before construction can begin, the contractor shall submit to the Employer's Agent for his approval, plans of the exact location, extent and construction details of these facilities and the impact mitigation measures the contractor proposes to put in place.

The plans shall detail the locality as well as the layout of the waste treatment facilities for litter, kitchen refuse, sewage and workshop-derived effluents. The site offices should not be sited in close proximity to steep areas, as this will increase soil erosion. Preferred locations would be flat areas along the route. If the route traverses water courses, streams and rivers, it is recommended that the offices, and in particular the ablution facilities, aggregate stockpiles, spoil areas and hazardous material stockpiles are located as far away as possible from any water course as possible. Regardless of the chosen site, the contractor's intended mitigation measures shall be indicated on the plan. The site plan shall be submitted not later than the first site meeting. Detailed, electronic colour photographs shall be taken of the proposed site before any clearing may commence. These records are to be kept by the Employer's Agent for consultation during rehabilitation of the site. Read with COLTO Specification 1302(a), 1402 (e).

ii) Vegetation

The contractor has a responsibility to inform his staff of the need to be vigilant against any practice that will have a harmful effect on vegetation.

The natural vegetation encountered on the site is to be conserved and left as intact as possible. Vegetation planted at the site shall be indigenous and in accordance with instructions issued by the Employer's Agent. Only trees and shrubs directly affected by the works, and such others as may be indicated by the Employer's Agent in writing, may be felled or cleared. In wooded areas where natural vegetation has been cleared out of necessity, the same species of indigenous trees as were occurring, shall be re-established.

The project specification for the rehabilitation of the grass cover shall be strictly adhered to. Any proclaimed weed or alien species that propagates during the contract period shall be cleared by hand before seeding. (Read in conjunction with COLTO Specification 5801(b), 5802(b), (c), (d) and (e), 5804, 5805, 5806 and 5807). Fires shall

only be allowed in facilities or equipment specially constructed for this purpose. A firebreak shall be cleared and maintained around the perimeter of the camp and office sites.

iii) Rehabilitation

The area where the site offices were erected will require rehabilitation at the end of the contract. All construction material, including concrete slabs and braai areas shall be removed from the site on completion of the contract.

iv) Water for human consumption

Water for human consumption shall be available at the site offices and at other convenient locations on site. All effluent water from the camp / office sites shall be disposed of in a properly designed and constructed system, situated so as not to adversely affect water sources (streams, rivers, pans dams etc). Only domestic type wastewater shall be allowed to enter this drain.

v) Heating and Cooking fuel

The contractor shall provide adequate facilities for his staff so that they are not encouraged to supplement their comforts on site by accessing what can be taken from the natural surroundings. The contractor shall ensure that energy sources are available at all times for construction and supervision personnel for heating and cooking purposes.

b) Sewage treatment

Particular reference in the site establishment plan shall be given to the treatment of sewage generated at the site offices, site laboratory and staff accommodation and at all localities on the site where there will be a concentration of labour. Sanitary arrangements should be to the satisfaction of project management, the local authorities and legal requirements.

Safe and effective sewage treatment will require one of the following sewage handling methods: septic tanks and soak-aways, dry-composting toilets such as "enviro loos", or the use of chemical toilets which are supplied and maintained by a subcontractor. The type of sewage treatment will depend on the geology of the area selected, the duration of the contract and proximity (availability) of providers of chemical toilets. Should a soak-away system be used, it shall not be closer than 800 metres from any natural water course or water retention system. The waste material generated from these facilities shall be serviced on a regular basis. The positioning of the chemical toilets shall be done in consultation with the Employer's Agent. Read with COLTO Specifications 1402(g) and 1404(a).

Toilets and latrines shall be easily accessible and shall be positioned within walking distance from wherever employees are employed on the works. Use of the veld for this purpose shall not, under any circumstances, be allowed.

Outside toilets shall be provided with locks and doors and shall be secured to prevent them from blowing over. The toilets shall also be placed outside areas susceptible to flooding. The contractor shall arrange for regular emptying of toilets and shall be entirely responsible for enforcing their use and for maintaining such latrines in a clean, orderly and sanitary condition to the satisfaction of the Employer's Agent.

c) Waste Management

The contractor's intended methods for waste management and waste minimisation shall be implemented at the outset of the contract. All personnel shall be instructed to dispose of all waste in the proper manner.

i) Solid Waste

Solid waste shall be stored in an appointed area in covered, tip proof metal drums for collection and disposal. A refuse control system shall be established for the collection and removal of refuse to the satisfaction of the Employer's Agent. Disposal of solid waste shall be at a Department of Water Affairs and Forestry (DWAF) licensed landfill site or at a site approved by DWAF in the event that an existing operating landfill site is not within reasonable distance from the site offices and staff accommodation. No waste shall be burned or buried at or near the site offices, nor anywhere else on the site, including the approved solid waste disposal site. Read with COLTO Specification 1404(a).

ii) Litter

No littering by construction workers shall be allowed. During the construction period, the facilities shall be maintained in a neat and tidy condition and the site shall be kept free of litter.

Measures shall be taken to reduce the potential for litter and negligent behaviour with regard to the disposal of all refuse. At all places of work the contractor shall provide litter collection facilities for later safe disposal at approved sites. (Read with COLTO Specification 1302(b)).

iii) Hazardous waste

Hazardous waste such as bitumen, tar, oils etc. shall be disposed of in a Department of Water Affairs and Forestry approved landfill site. Special care shall be taken to avoid spillage of tar or bitumen products such as binders or pre-coating fluid to avoid water-soluble phenols from entering the ground or contaminating water. Under no circumstances shall the spoiling of tar or bituminous products on the site, over embankments, in borrow pits or any burying, be allowed. Unused or rejected tar or bituminous products shall be returned to the supplier's production plant. Any spillage of tar or bituminous products shall be attended to immediately and affected areas shall be promptly reinstated to the satisfaction of the Employer's Agent.

d) Control at the workshop

The contractor's management and maintenance of his plant and machinery will be strictly monitored according to the criteria given below, regardless whether it is serviced on the site (i.e. at the place of construction activity or at a formalised workshop).

i) Safety

All the necessary handling and safety equipment required for the safe use of petrochemicals and oils shall be provided by the contractor to, and used or worn by, the staff whose duty it is to manage and maintain the contractor's and his subcontractor's and supplier's plant, machinery and equipment.

ii) Hazardous Material Storage

Petrochemicals, oils and identified hazardous substances shall only be stored under controlled conditions. All hazardous materials e.g. tar or bitumen binders shall be stored in a secured, appointed area that is fenced and has restricted entry. Storage of tar or bituminous products shall only take place using suitable containers to the approval of the Employer's Agent.

The contractor shall provide proof to the Employer's Agent that relevant authorisation to store such substances has been obtained from the relevant authority. In addition, hazard signs indicating the nature of the stored materials shall be displayed on the storage facility or containment structure. Before containment or storage facilities can be erected the contractor shall furnish the Employer's Agent with details of the preventative measures he proposes to install in order to mitigate against pollution of the surrounding environment from leaks or spillage. The preferred method shall be a concrete floor that is bunded. Any deviation from the method will require proof from the relevant authority that the alternative method proposed is acceptable to that authority. The proposals shall also indicate the emergency procedures in the event of misuse or spillage that will negatively affect an individual or the environment.

iii) Fuel and Gas Storage

Fuel shall be stored in a secure area in a steel tank supplied and maintained by the fuel suppliers.. An adequate bund wall, 110% of volume, shall be provided for fuel and diesel areas to accommodate any leakage spillage or overflow of these substances. The area inside the bund wall shall be lined with an impervious lining to prevent infiltration of the fuel into the soil. Any leakage, spillage or overflow of fuel shall be attended to without delay.

Gas welding cylinders and LPG cylinders shall be stored in a secure, well-ventilated area.

iv) Oil and Lubricant Waste

Used oil, lubricants and cleaning materials from the maintenance of vehicles and machinery shall be collected in a holding tank and sent back to the supplier. Water and oil should be separated in an oil trap. Oils collected in this manner, shall be retained in a safe holding tank and removed from site by a specialist oil recycling company for disposal at approved waste disposal sites for toxic/hazardous materials. Oil collected by a mobile servicing unit shall be stored in the service unit's sludge tank and discharged into the safe holding tank for collection by the specialist oil recycling company.

All used filter materials shall be stored in a secure bin for disposal off site. Any contaminated soil shall be removed and replaced. Soils contaminated by oils and lubricants shall be collected and disposed of at a facility designated by the local authority to accept contaminated materials.

e) Clearing the Site

In all areas where the contractor intends to, or is required to clear the natural vegetation and soil, either within the road reserve, or at designated or instructed areas outside the road reserve, a plan of action shall first be submitted to the Employer's Agent for his approval.

The plan shall contain a photographic record and chainage/land reference of the areas to be disturbed. This shall be submitted to the Employer's Agent for his records before any disturbance/stockpiling may occur. The record shall be comprehensive and clear, allowing for easy identification during subsequent inspections.

The contractor shall be responsible for the re-establishment of grass within the road reserve boundaries for all areas disturbed during road construction. This includes, for example, service roads, stockpile areas, stop/go facilities, windrows and wherever material generated for, or from, road construction has to be stored temporarily or otherwise within the road reserve, or at designated or instructed areas outside the road reserve. This responsibility shall extend until expiry of the defects notification period.

f) Soil Management

i) Topsoil

Topsoil shall be removed from all areas where physical disturbance of the surface will occur and shall be stored and adequately protected. The contract will provide for the stripping and stockpiling of topsoil from the site for later re-use. Topsoil is considered to be the natural soil covering, including all the vegetation and organic matter. Depth may vary at each site. The areas to be cleared of topsoil shall include the storage areas. All topsoil stockpiles and windrows shall be maintained throughout the contract period in a weed-free condition. Weeds appearing on the stockpiled or windrowed topsoil shall be removed by hand. Soils contaminated by hazardous substances shall be disposed of at an approved Department of Water Affairs and Forestry waste disposal site. (Read with COLTO Specifications 3104(a), 5802(a), (g), 5804(a), (b) and (c)). The topsoil stockpiles shall be stored, shaped and sited in such a way that they do not interfere with the flow of water to cause damming or erosion, or itself be eroded by the action of water. Stockpiles of topsoil shall not exceed a height of 2m, and if they are to be left for longer than 6 months, shall be analysed, and if necessary, upgraded before replacement. Stockpiles shall be protected against infestation by weeds.

The contractor shall ensure that no topsoil is lost due to erosion – either by wind or water. Areas to be topsoiled and grassed shall be done so systematically to allow for quick cover and reduction in the chance of heavy topsoil losses due to unusual weather patterns. The contractor's programme shall clearly show the proposed rate of progress of the application of topsoil and grassing. The contractor shall be held responsible for the replacement, at his own cost, for any unnecessary loss of topsoil due to his failure to work according to the progress plan approved by the Employer's Agent. The contractor's responsibility shall also extend to the clearing of drainage or water systems within and beyond the boundaries of the road reserve that may have been affected by such negligence.

ii) Subsoil

The subsoil is the layer of soil immediately beneath the topsoil. It shall be removed, to a depth instructed by the Employer's Agent, and stored separately from the topsoil if not used for road building. This soil shall be replaced in the excavation in the original order it was removed for rehabilitation purposes.

g) Drainage

The quality, quantity and flow direction of any surface water runoff shall be established prior to disturbing any area for construction purposes. Cognisance shall be taken of these aspects and incorporated into the planning of all construction activities. Before a site is developed or expanded, it shall be established how this development or

expansion will affect the drainage pattern. Recognised water users / receivers shall not be adversely affected by the expansion or re-development. No water source shall be polluted in any way due to proposed changes. Streams, rivers, pans, wetlands, dams, and their catchments shall be protected from erosion and from direct or indirect spillage of pollutants such as refuse, garbage, cement, concrete, sewage, chemicals, fuels, oils, aggregate, tailings, wash water, organic materials and bituminous or tar products.

The contractor shall submit to the Employer's Agent his proposals for prevention, containment and rehabilitation measures against environmental damage of the identified water and drainage systems that occur on the site.

Consideration shall be given to the placement of sedimentation ponds or barriers where the soils are of a dispersive nature or where toxic fluids are used in the construction process. The sedimentation ponds must be large enough to contain runoff so that they function properly under heavy rain conditions.

h) Earthworks and Layerworks

This section includes all construction activities that involve the mining of all materials, and their subsequent placement, stockpile, spoil, treatment or batching, for use in the permanent works, or temporary works in the case of deviations. Before any stripping prior to the commencement of construction, the contractor shall have complied with the requirements of sections C1008 (e) and C1008 (g). In addition, the contractor shall take cognisance of the requirements set out below.

i) Quarries and borrow pits

The contractor's attention is drawn to the requirement of the Department of Minerals and Energy, that before entry into any quarry or borrow pit, an EMP for the establishment, operation and closure of the quarry or borrow pit shall have been approved by the Department. It is the responsibility of the contractor to ensure that he is in possession of the approved EMP or a copy thereof, prior to entry into the quarry or borrow pit. The conditions imposed by the relevant EMP are legally binding on the contractor and may be more extensive and explicit than the requirements of this specification. In the event of any conflict occurring between the requirements of the specific EMP and these specifications the former shall apply. The cost of complying with the requirements shall be deemed to be included in existing rates in the Bill of Quantities. (Read with COLTO Specification 3100 and 3200).

ii) Excavation, hauling and placement

The contractor shall provide the Employer's Agent with detailed plans of his intended construction processes prior to starting any cut or fill or layer. The plans shall detail the number of personnel and plant to be used and the measures by which the impacts of pollution (noise, dust, litter, fuel, oil, sewage), erosion, vegetation destruction and deformation of landscape will be prevented, contained and rehabilitated. Particular attention shall also be given to the impact that such activities will have on the adjacent built environment. The contractor shall demonstrate his "good housekeeping", particularly with respect to closure at the end of every day so that the site is left in a safe condition from rainfall overnight or over periods when there is no construction activity. (Read with COLTO Standard Specification clauses 1217 and 3309)

iii) Spoil sites

The contractor shall be responsible for the safe siting, operation, maintenance and closure of any spoil site he uses during the contract period, including the defects notification period. This shall include existing spoil sites that are being re-entered. Before spoil sites may be used proposals for their locality, intended method of operation, maintenance and rehabilitation shall be given to the Employer's Agent for his approval. The location of these spoil sites shall have signed approval from the affected landowner before submission to the Employer's Agent. No spoil site shall be located within 500m of any watercourse. A photographic record shall be kept of all spoil sites for monitoring purposes. This includes before the site is used and after re-vegetation.

The use of approved spoil sites for the disposal of hazardous or toxic wastes shall be prohibited unless special measures are taken to prevent leaching of the toxins into the surrounding environment. Such special measures shall require the approval of the relevant provincial or national authority. The same shall apply for the disposal of solid waste generated from the various camp establishments. The Employer's Agent will assist the contractor in obtaining the necessary approval if requested by the contractor.

Spoil sites will be shaped to fit the natural topography. These sites shall receive a minimum of 75mm topsoil and be grassed with the recommended seed mixture. Slopes shall not exceed a vertical: horizontal ratio of 1:3. Only under exceptional circumstances will approval be given to exceed this ratio. Appropriate grassing measures to minimise soil erosion shall be undertaken by the contractor. This will include both strip and full sodding. The contractor may motivate to the Employer's Agent for other acceptable stabilising methods. The Employer's Agent may only approve a completed spoil site at the end of the defects notification period upon receipt from the contractor of a landowner's clearance notice and an Employer's Agent's certificate certifying slope stability (Read with COLTO standard Specifications clause 1214). The contractor's costs incurred in obtaining the necessary certification for opening and closing of spoil sites shall be deemed to be included in the tendered rates for spoiling.

iv) Stockpiles

The contractor shall plan his activities so that materials excavated from borrow pits and cuttings, in so far as possible, can be transported direct to and placed at the point where it is to be used. However, should temporary stockpiling become necessary, the areas for the stockpiling of excavated and imported material shall be indicated and demarcated on the site plan submitted in writing to the Employer's Agent for his approval, together with the contractor's proposed measures for prevention, containment and rehabilitation against environmental damage.

The areas chosen shall have no naturally occurring indigenous trees and shrubs present that may be damaged during operations. Care shall be taken to preserve all vegetation in the immediate area of these temporary stockpiles. During the life of the stockpiles the contractor shall at all times ensure that they are:

- Positioned and sloped to create the least visual impact;
- Constructed and maintained so as to avoid erosion of the material and contamination of surrounding environment; and
- Kept free from all alien/undesirable vegetation.

After the stockpiled material has been removed, the site shall be re-instated to its original condition. No foreign material generated / deposited during construction shall remain on site. Areas affected by stockpiling shall be landscaped, top soiled, grassed and maintained at the contractor's cost until clearance from the Employer's Agent and the relevant Authority is received.

Material milled from the existing road surface that is temporarily stockpiled in areas approved by the Employer's Agent within the road reserve, shall be subject to the same condition as other stockpiled materials. Excess materials from windrows, in-situ milling or any detritus of material from road construction activities may not be swept off the road and left unless specifically instructed to do so in the contract drawing or under instruction from the Employer's Agent

In all cases, the Employer's Agent shall approve the areas for stockpiling and disposal of construction rubble before any operation commences and shall approve their clause only when they have been satisfactorily rehabilitated. (Read with COLTO Specification 3203 and 4306).

v) Blasting activities

Wherever blasting activity is required on the site (including quarries and/or borrow pits) the contractor shall rigorously adhere to the relevant statutes and regulations that control the use of explosives. In addition, the contractor shall, prior to any drilling of holes in preparation for blasting, supply the Employer's Agent with a locality plan of the blast site on which shall be shown the zones of influence of the ground and air shock-waves and expected limits of fly-rock. The plan shall show each dwelling, structure and service within the zones of influence and record all details of the dwellings/structures/services including existing positions, lengths and widths of cracks, as well as the condition of doors, windows, roofing, wells, boreholes etc. The contractor, alone, shall be responsible for any costs that can be attributed to blasting activities, including the collection of fly-rock from adjacent lands and fields. The submission of such a plan shall not in any way absolve the contractor from his responsibilities in this regard. The contractor shall also indicate to the Employer's Agent the manner in which he intends to advertise to the adjacent communities and/or road users the times and delays to be expected for each individual blast.

i) Batching sites

Asphalt plants are considered scheduled processes listed in the second schedule to the Atmospheric Pollution Prevention Act, 1965 (Act No. 45 of 1965). Should the use of an asphalt plant be considered on site, the contractor shall be responsible to obtain the necessary permit from the Department of Environmental Affairs and Tourism, regardless of where they are sited.

Crushing plants and concrete batching plants, whether sited inside or outside of defined quarry or borrow pit areas, shall be subject to the requirements of the Department of Minerals and Energy legislation as well as the applicable industrial legislation that governs gas and dust emissions into the atmosphere. Such sites will be the subject of regular inspections by the relevant authorities during the life of the project. In addition, the selection, entry onto, operation, maintenance, closure and rehabilitation of such sites shall be the same as for those under section C1008(h)(iii), with the exception that the contractor shall provide additional measures to prevent, contain and rehabilitate against environmental damage from toxic/hazardous substances. In this regard the contractor shall provide plans that take into account such additional measures as concrete floors, bunded storage facilities, linings to drainage channels and settlement dams. Ultimate approval of these measures shall be from the relevant national authority, as shall approval of closure. The Employer's Agent will assist the contractor in his submissions to the relevant authority.

Effluent from concrete batch plants and crusher plants shall be treated in a suitable designated sedimentation dam to the legally required standards to prevent surface and groundwater pollution. The designs of such a facility should be submitted to the Employer's Agent for approval.

The contractor shall invite the relevant department to inspect the site within 2 months after any plant is commissioned and at regular intervals thereafter, not exceeding 12 months apart

j) Spillages

Streams, rivers and dams shall be protected from direct or indirect spillage of pollutants such as refuse, garbage, cement, concrete, sewage, chemicals, fuels, oils, aggregate, tailings, wash water, organic materials and tar or bituminous products. In the event of a spillage, the contractor shall be liable to arrange for professional service providers to clear the affected area.

Responsibility for spill treatment lies with the contractor. The individual responsible for, or who discovers a hazardous waste spill must report the incident to his/her DEO or to the Employer's Agent. The Designated Environmental Officer will assess the situation in consultation with the Employer's Agent and act as required. In all cases, the immediate response shall be to contain the spill. The exact treatment of polluted soil / water shall be determined by the contractor in consultation with the DEO and the Employer's Agent. Areas cleared of hazardous waste shall be re-vegetated according to the Employer's Agent's instructions

Should water downstream of the spill be polluted, and fauna and flora show signs of deterioration or death, specialist hydrological or ecological advice will be sought for appropriate treatment and remedial procedures to be followed. The requirement for such input shall be agreed with the Employer's Agent. The costs of containment and rehabilitation shall be for the contractor's account, including the costs of specialist input.

k) Areas of Specific Importance

Any area, as determined and identified within the project document as sensitive or of special interest within the site shall be treated according to the express instructions contained in these specifications or the approved EMP. The contractor may offer alternative solutions to the Employer's Agent in writing should he consider that construction will be affected in any way by the hindrance of the designated sensitive area or feature. However, the overriding principle is that such defined areas requiring protection shall not be changed. Every effort to identify such areas within the site will have been made prior to the project going out to tender. The discovery of other sites with archaeological or historical interest that have not been identified shall require ad hoc treatment.

i) Archaeological Sites

If an artefact on site is uncovered, work in the immediate vicinity shall be stopped immediately. The contractor shall take reasonable precautions to prevent any person from removing or damaging any such article and shall immediately upon discovery thereof inform the Employer's Agent of such discovery. The South African Heritage Research Agency (SAHRA) is to be contacted who will appoint an archaeological consultant. Work may only resume once clearance is given in writing by the archaeologist. (Read with COLTO General Condition of).

ii) Graves and middens

If a grave or midden is uncovered on site, or discovered before the commencement of work, then all work in the immediate vicinity of the graves/middens shall be stopped and the Employer's Agent informed of the discovery. SAHRA should be contacted and in the case of graves, arrangements made for an undertaker to carry out exhumation and reburial. The Employer will be responsible for attempts to contact family of the deceased and for the site where the exhumed remains can be re-interred. (Read with COLTO and General Conditions of Contract).

l) Noise Control

The contractor shall endeavour to keep noise generating activities to a minimum. Noises that could cause a major disturbance, for instance blasting and crushing activities, should only be carried out during daylight hours. Compliance with the appropriate legislation with respect to noise, shall be mandatory.

Should noise generating activities have to occur at night the people in the vicinity of the drilling shall be warned about the noise well in advance and the activities kept to a minimum.

m) Dust Control

Dust caused by strong winds shall be controlled by means of water spray vehicles. Dust omission from batching plants shall be subject to the relevant legislation and shall be the subject of inspection by the relevant office of the Department of Minerals and Energy.

n) Alien Vegetation

The contractor shall be held responsible for the removal of alien vegetation within the road reserve disturbed during road construction. This includes, for example, service roads, stockpile areas, stop/go facilities, windrows and wherever material generated for or from road construction has been stored temporarily or otherwise within the road reserve. This responsibility shall extend for the duration of the defects notification period.

C3.4.3.3.9 RECORD KEEPING

The Employer's Agent and the DEO will continuously monitor the contractor's adherence to the approved impact prevention procedures and the Employer's Agent shall issue to the contractor a notice of non-compliance whenever transgressions are observed. The DEO should document the nature and magnitude of the non-compliance in a designated register, the action taken to discontinue the non-compliance, the action taken to mitigate its effects and the results of the actions. The non-compliance shall be documented and reported to the Employer's Agent in the monthly report.

Copies of any record of decision or EMP's for specific borrow pits or quarries used on the project shall be kept on site and made available for inspection by visiting officials from the employer or relevant environmental departments.

C3.4.3.3.10 COMPLIANCE AND PENALTIES

The contractor shall act immediately when such notice of non-compliance is received and correct whatever is the cause for the issuing of the notice. Complaints received regarding activities on the construction site pertaining to the environment shall be recorded in a dedicated register and the response noted with the date and action taken. This record shall be submitted with the monthly reports and a verbal report given at the monthly site meetings. Any avoidable non-compliance with the above-mentioned measures shall be considered sufficient ground for the imposition of a penalty

The following penalties shall apply for environmental violations:

a) Unnecessary removal or damage to trees

2600mm girth or less:	R 5 000 per tree
Greater than 2600mm, but less than 6180mm girth:	R10 000 per tree
Greater than 6180mm girth:	R30 000 per tree

b) **Serious violations:**

- Hazardous chemical/oil spill and/or dumping in non-approved sites. : R10 000 per incident
- General damage to sensitive environments. : R 5 000 per incident
- Damage to cultural and historical sites. : R 5 000 per incident
- Uncontrolled/unmanaged erosion (plus rehabilitation at contractor's cost). : R1 000 to R5 000 per incident
- Unauthorised blasting activities. : R 5 000 per incident
- Pollution of water sources. : R 10 000 per incident

The Employer's Agent's decision with regard to what is considered a violation, its seriousness and the penalty imposed shall be final.

c) **Less serious violations:**

- Littering on site. : R1 000 per incident
- Lighting of illegal fires on site. : R1 000 per incident
- Persistent or un-repaired fuel and oil leaks. : R1 000 per incident
- Excess dust or excess noise emanating from site. : R1 000 per incident

- Dumping of milled material in side drains or on grassed areas: R1 000 per incident
- Possession or use of intoxicating substances on site. : R 500 per incident
- Any vehicles being driven in excess of designated speed limits. : R 500 per incident
- Removal and/or damage to flora or cultural or heritage objects on site, and/or killing of wildlife. : R2 000 per incident
- Illegal hunting. : R2 000 per incident
- Urination and defecation anywhere except in designated areas. : R 500 per incident

The Employer's Agent's decision with regard to what is considered a violation, its seriousness and the penalty imposed shall be final. The calculation shall include allied construction activities in the same way as the calculation of reduced payments under section 8200. The imposition of such a penalty shall not preclude the relevant provincial or national authority from applying an additional penalty in accordance with its statutory powers. Any non-compliance with the agreed procedures of the EMP is a transgression of the various statutes and laws that define the manner by which the environment is managed. Failure to redress the cause shall be reported to the relevant authority for them to deal with the transgression, as it deems fit.

C3.4.3.3.11 MEASUREMENT AND PAYMENT

The cost of complying to this specification shall be deemed to be included in the rates tendered for this project.

Item

G100.01 Penalty for unnecessary removal or damage to trees

for the following diameter sizes

- | | | |
|-----|---|-------------|
| (a) | 2600mm girth or less | number (No) |
| (b) | Greater than 2600mm, but less than 6180mm girth | number (No) |
| (c) | Greater than 6180mm girth | number (No) |

The unit of measurement shall be the number of trees by diameter size removed unnecessary or damaged. The penalty rates applied shall be those stated in clause C3.5.2.10.

Item

G100.02 Penalty for serious violations

- | | | |
|-----|--|-------------|
| (a) | Hazardous chemical/oil spill and/or dumping in non-approved sites | number (No) |
| (b) | General damage to sensitive environments | number (No) |
| (c) | Damage to cultural and historical sites | number (No) |
| (d) | Pollution of water sources | number (No) |
| (e) | Unauthorised blasting activities | number (No) |
| (f) | Uncontrolled/unmanaged erosion per incident, depending on environment impacts, plus rehabilitation at contractor's cost) | number (No) |

The unit of measurement for D100.02 (a) to (f) shall be the number of serious violation incidents. The penalty rates to be applied shall be those stated in clause C3.5.2.10.

Item

G100.03 Penalty for less serious violations

- | | | |
|---|--|-------------|
| • | Littering on site | number (No) |
| • | Lighting of illegal fires on site | number (No) |
| • | Persistent or un-repaired fuel and oil leaks | number (No) |
| • | Excess dust or excess noise emanating from site | number (No) |
| • | Dumping of milled material in side drains or on grassed areas | number (No) |
| • | Possession or use of intoxicating substances on site | number (No) |
| • | Any vehicles being driven in excess of designated speed limits | number (No) |
| • | Removal and/or damage to flora or cultural or heritage objects on site, and/or killing of wildlife | number (No) |
| • | Illegal hunting | number (No) |
| • | Urination and defecation anywhere except in designated areas | number (No) |

The unit of measurement shall be the number of less serious violation incidents. The penalty rates applied shall be those stated in clause C3.5.2.10.

The Employer's Agent's decision with regard to what is considered a violation, its seriousness and the penalty imposed shall be final. The calculation shall include allied construction activities in the same way as the calculation of reduced payments under section 8200. The imposition of such a penalty shall not preclude the relevant provincial or national authority from applying an additional penalty in accordance with its statutory powers. Any non-compliance with the agreed procedures of the EMP is a transgression of the various statutes and laws that define the manner by which the environment is managed.

Failure to redress the cause shall be reported to the relevant authority for them to deal with the transgression, as it deems fit.

Table 1: Mechanisms that Cause Environmental Impacts during Construction Activities

SECTION	CONTENTS	ENVIRONMENTAL IMPACTS				
		POLLUTION TYPE	DEFORMATION OF LANDSCAPE	SOIL EROSION	ALIEN VEGETATION	SENSITIVE AREAS (to be completed by compiler)
1300	Camp Establishment	Waste treatment Hazardous waste Water supply Spillage Storage	Selection of site Preserve indigenous vegetation Preserve topsoil	Selection of site Preserve indigenous vegetation Preserve topsoil	Preserve indigenous vegetation Preserve topsoil Management of weeds	
1400	Housing, Offices and laboratories	Waste treatment Hazardous waste Water supply Spillage Storage Noise/lights	Selection of site Preserve indigenous vegetation Preserve topsoil Demarcate sensitive areas	Selection of site Preserve indigenous vegetation Preserve topsoil	Preserve indigenous vegetation Preserve topsoil Management of weeds	
1500	Accommodation of Traffic	Waste treatment Hazardous waste Water supply Spillage Storage Noise/lights Dust control	Selection of site Preserve indigenous vegetation Preserve topsoil Demarcate sensitive areas Maintenance of windrows	Selection of site Preserve indigenous vegetation Preserve topsoil	Preserve indigenous vegetation Preserve topsoil Management of weeds	
1600	Overhaul	Spillage Storage Noise/lights Dust control Exhaust fumes Washing waste	Turning circles Parking areas	Restrict access to sensitive areas	Protection of indigenous vegetation Preserve topsoil	
1700	Clearing and grubbing	Waste treatment Hazardous waste Water supply Noise /lights Dust control	Selection of site Preserve indigenous vegetation Preserve topsoil	Selection of site Preserve indigenous vegetation Preserve topsoil	Protection of indigenous vegetation Preserve topsoil	
2100 -2400	Drainage	Waste treatment Hazardous waste Water supply Spillage Storage	Selection of site Preserve indigenous vegetation Preserve topsoil	Selection of site Preserve indigenous vegetation Preserve topsoil	Preserve indigenous vegetation Preserve topsoil Management of weeds	

SECTION	CONTENTS	ENVIRONMENTAL IMPACTS				
		POLLUTION TYPE	DEFORMATION OF LANDSCAPE	SOIL EROSION	ALIEN VEGETATION	SENSITIVE AREAS (to be completed by compiler)
3100	Borrow pits	Waste treatment Hazardous waste Water supply Spillage Storage	Selection of site Preserve indigenous vegetation Preserve topsoil	Selection of site Preserve indigenous vegetation Preserve topsoil	Preserve indigenous vegetation Preserve topsoil Management of weeds	
3200	Stockpiling	Waste treatment Hazardous waste Water supply Spillage Storage	Selection of site Preserve indigenous vegetation Preserve topsoil	Selection of site Preserve indigenous vegetation Preserve topsoil	Preserve indigenous vegetation Preserve topsoil Management of weeds	
3300	Mass Earthworks	Waste treatment Hazardous waste Water supply Spillage Storage	Selection of site Preserve indigenous vegetation Preserve topsoil	Selection of site Preserve indigenous vegetation Preserve topsoil	Preserve indigenous vegetation Preserve topsoil Management of weeds	
3400 - 3900	Pavement layers	Waste treatment Hazardous waste Water supply Spillage Storage Noise / lights Dust control	Selection of site Preserve indigenous vegetation Preserve topsoil Demarcate sensitive areas Maintenance of windrows	Selection of site Preserve indigenous vegetation Preserve topsoil	Preserve indigenous vegetation Preserve topsoil Management of weeds	
4100	Asphalt works / sealing operations	Waste treatment Hazardous waste Water supply Spillage Storage Noise / lights Dust control Smoke control Storage of materials	Selection of site Preserve indigenous vegetation Preserve topsoil Turning circles Parking areas	Selection of site Preserve indigenous vegetation Preserve topsoil	Preserve indigenous vegetation Preserve topsoil	
5000	Ancilliary roadworks	Waste treatment Hazardous waste Water supply Spillage Storage	Selection of site Preserve indigenous vegetation Preserve topsoil	Selection of site Preserve indigenous vegetation Preserve topsoil	Preserve indigenous vegetation Preserve topsoil Management of weeds	

SECTION	CONTENTS	ENVIRONMENTAL IMPACTS				
		POLLUTION TYPE	DEFORMATION OF LANDSCAPE	SOIL EROSION	ALIEN VEGETATION	SENSITIVE AREAS (to be completed by compiler)
6000	Structures	Waste treatment Hazardous waste Water supply Spillage Storage	Selection of site Preserve indigenous vegetation Preserve topsoil	Selection of site Preserve indigenous vegetation Preserve topsoil	Preserve indigenous vegetation Preserve topsoil Management of weeds	
7000	Concrete pavements etc	Waste treatment Hazardous waste Water supply Spillage Storage	Selection of site Preserve indigenous vegetation Preserve topsoil	Selection of site Preserve indigenous vegetation Preserve topsoil	Preserve indigenous vegetation Preserve topsoil Management of weeds	

C3.4.3.4 PROVISION OF STRUCTURED TRAINING

CONTENTS

- C3.4.3.4.1 SCOPE
- C3.4.3.4.2 GENERIC TRAINING
- C3.4.3.4.3 ENTREPRENEURIAL SKILLS TRAINING
- C3.4.3.4.4 MEASUREMENT AND PAYMENT

C3.4.3.4.1 SCOPE

This specification covers the requirements for the provision of structured training to be arranged by the contractor over the period of this contract.

C3.4.3.4.2 GENERIC TRAINING

C3.4.3.4.2.1 The contractor shall, from the commencement of the contract, implement a structured progressive training programme.

C3.4.3.4.2.2 Training shall be at or by an approved accredited organisation and shall be delivered by suitably qualified and experienced trainers.

C3.4.3.4.2.3 The contractor shall be responsible for the provision of everything necessary for the delivery of the generic training programme, including the following:

- (a) A suitable venue with sufficient furniture, lighting and power.
- (b) All necessary stationery consumables and study material.
- (c) Transport of the students (as necessary).

C3.4.3.4.2.4 Generic training courses shall commence within one month of possession of site and be completed before the end of the contract period. The Training Schedule should form part of the section 12 programme to be approved by the Employer's Agent at the start of the project.

C3.4.3.4.2.5 The contractor's training programme shall be subject to the approval of the Department and the contractor shall if so instructed by the Department alter or amend the programme and course content if a need is identified once the contract commences.

C3.4.3.4.2.6 The contractor shall keep comprehensive records of the training given to each student and whenever required shall provide copies of such records to the Employer's Agent. At the successful completion of each course each student shall be issued with a certificate indicating the course contents as proof of attendance and completion.

In addition to the above, a monthly return shall be submitted by the contractor. An example of the form is illustrated in Part C5 of this document (form RDP 11 (E))

C3.4.3.4.3 ENTREPRENEURIAL SKILLS TRAINING

C3.4.3.4.3.1 Small contractors, subcontractors and the Project Steering Committee (PSC) will be entitled to receive a structured training programme, which will comprise both management skills as well as business development skills.

C3.4.3.4.3.2 The contractor shall closely monitor the performance of all small subcontractors in the execution of their contracts and shall identify all such subcontractors who, in his opinion, display the potential to benefit from structured training as may be provided for in the contract and where required by the Employer's Agent, shall make recommendations in this regard. The final list of candidates will be decided between the contractor and the Employer's Agent.

C3.4.3.4.3.3 The training will be delivered by trainers who are accredited by the Civil Employer's Agenting Training Scheme (CEITS) or other institutions recognised by the Department of Labour. Accredited training refers to both the trainers as well as to the training material.

C3.4.3.4.3.4 The contractor shall facilitate in the delivery thereof, by instructing and motivating the subcontractor regarding attendance and participation therein.

C3.4.3.4.3.5 The contractor shall further make all reasonable efforts to co-ordinate the programming of the subcontractor's work with that of the delivery of the structured training.

C3.4.3.4.3.7 The contractor shall be responsible for the provision of everything necessary for the delivery of the entrepreneurial training programme, including the following:

- (a) A suitably furnished venue (if required) with lighting and power.
- (b) All necessary consumables, stationery and study material.

(c) Transport of the subcontractors (as necessary).

C3.4.3.4.3.7 All entrepreneurial training shall take place within normal working hours.

C3.4.3.4.3.8 The contractor's training programme shall be subject to the approval of the Department and the contractor shall if so instructed by the Department alter or amend the programme and course content if a need is identified once the contract commences.

C3.4.3.4.3.10 The contractor shall keep comprehensive records of the training given to each subcontractor and whenever required shall provide copies of such records to the Employer's Agent. At the successful completion of each course each subcontractor shall be issued with a certificate indicating the course contents as proof of attendance and completion.

In addition to the above, a monthly return shall be submitted by the contractor. An example of the form to be used is illustrated in Part C5 of this document, (form RDP 12 (E)).

C3.4.3.4.4

MEASUREMENT AND PAYMENT

ITEM

UNIT

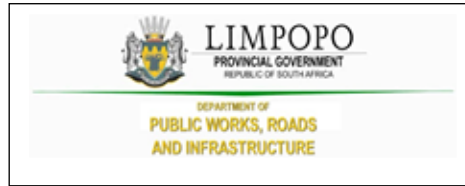
C100.01 Contractor's general obligations in respect of Training using CETA Accredited Trainers

(a) Generic skills	Provisional sum
(b) Entrepreneurial skills	Provisional sum
(c) Engineering skills	Provisional sum
(d) Handling cost, profit and all other charges in respect of sub-item C100.01 (a)-(c) above	Percentage (%)
(e) Training venue	Lump sum
(f) Training allowance to be paid to targeted labour in terms of formal training days	Provisional sum
(g) Contractor's handling costs, profit and all other charges in respect of subitem C100.01 (f) above	Percentage (%)

The Provisional sum are provided to cover the actual costs (including wages) for attendance of accredited training courses as agreed with the Employer's Agent and payment shall be in accordance with the general conditions of contract. The tendered percentage in sub-item C100.01 (d) & (g) is a percentage of the amount actually spent under sub-items C100.01 (a-c) and (f) which shall include full compensation for the contractor's handling cost, profit, mentoring, record keeping, reporting and all other costs in connection therewith.

The lump sum tendered for C100.01 (e) shall include full compensation for the provision of the training venue, for all necessary lighting, power, furniture, stationery, consumables and study material and for transportation of the students to and from the training venue.

Payment of the lump sum will be made after the provision of all the accredit training, issuing of all certificates and submission of all records and a training report compiled by the trainer.



PUBLIC WORKS, ROADS AND INFRASTRUCTURE

Specification for developing skills that result in nationally accredited outcomes through infrastructure contracts

September 2016

Issued by:

PUBLIC WORKS, ROADS AND INFRASTRUCTURE

Specification for developing skills that result in nationally accredited outcomes through infrastructure contracts

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Specification for developing skills that result in nationally accredited outcomes through infrastructure contracts

1 Scope

This specification establishes a key performance indicator in the form of a contract skills development goal (CSDG) relating to the structured work learning component of occupational or professional learning, which enables learners to make measurable progress towards the attainment of:

- a) a part or full occupational qualification registered on the National Qualification Framework,
- b) a trade qualification leading to a listed trade (GG No. 35625, 31 August 2012);
- c) a national diploma registered on the National Qualification Framework; or
- d) registration in a professional category by a recognized professional body or statutory council.

in the delivery, maintenance and operation of infrastructure through the performance of professional service, service, supply or engineering and construction works contracts or an order associated with such a contract.

This specification sets out the methods by which the key performance indicator is established, measured, quantified and verified in the performance of the contract or the execution of an order.

NOTE This specification can be applied to contracts or to orders (call-offs) issued in terms of framework agreements. Framework agreements are well suited to situations in which long term relationships are entered into. They offer flexibility in attaining contract skills development goals as requirements can be adjusted from one order to another, thus allowing key performance indicators to be improved upon over time.

a) 2 Terms and definitions

For the purposes of this document, the following terms and definitions apply:

allowance

amount provided for in the contract or an order by the employer relating to one or more of the following:

- a) the performance by the contractor of work or services that are foreseen but cannot be accurately specified at the time that the contract was entered into or the order issued;
- b) work or services to be performed, or goods provided, by a subcontractor who is either nominated by the employer or is selected by the employer in consultation with the contractor after the award of the contract or the issuing of an order;
- c) provision for price adjustment for inflation; or
- d) other budgetary provisions intended to cover the employer's contractual risks

artisan

a person who has been certified as competent to perform a listed trade in accordance with Section 26B of the Skills Development Act of 1998 (Act No. 97 of 1998)

black people

a generic term which means Africans, Coloureds and Indians and who are citizens of the Republic of South Africa:

- a) by birth or descent; or
- b) by naturalisation before 27 April 1994 or on or after 27 April 1994 and who would have been entitled to acquire citizenship by naturalisation prior to that date

candidate

a person who is registered in a category of registration which ultimately leads to registration in a professional category by a statutory council in terms of their founding legislation

class of construction works

the class of construction works referred to in Schedule 3 of the Construction Industry Development Regulations 2004 as amended and published in terms of the Construction Industry Development Board Act of 2000 (Act 38 of 2000)

contract amount

financial value of the contract at the time of the award of the contract or the issuing of an order, excluding all allowances and expenses and value added tax

contract skills development goal (CSDG)

the number of hours of skills development opportunities that a contractor contracts to provide in relation to work directly related to the contract or order up to:

- a) completion in the case of a professional service contract;
- b) the end of the service period in the case of a service contract;
- c) completion (state of readiness for occupation of the whole works although some minor work may be outstanding) in the case of an engineering and construction works contract; and
- d) the delivery date for all the work required in terms of the supply contract

contractor

person or organization that contracts to provide the goods, services or engineering and construction works covered by the contract

employer

person or organization intending to or entering into the contract with the contractor for the provision of goods, services, or engineering and construction works

employer's representative

person authorized to represent the employer in terms of the contract

engineering and construction works contract

contract for the provision of a combination of goods and services arranged for the development, extension, refurbishment, rehabilitation or demolition of a fixed asset, including building and engineering infrastructure

expenses

costs incurred by the contractor in the performance of the contract or order which are in terms of the contract recoverable from the employer

framework agreement

an agreement between an organ of state and one or more contractors, the purpose of which is to establish the terms governing orders to be awarded during a given period, in particular with regard to price and, where appropriate, the quantity envisaged

mentor

a qualified, experienced and, in the case of professionals, registered person, designated to guide a learner or candidate through a structured work experience learning component of a learning programme required for the acquisition of a part or full qualification or professional designation

occupational qualification

occupational qualification registered on the National Qualifications Framework Act (Act No 67 of 2008)

order

an instruction to provide goods, services or any combination thereof under a framework agreement

part qualification

an assessed unit of learning that is registered on the National Qualifications Framework as part of an occupational qualification

professional category

a category of registration identified in Table 1 or such other category recognised by the Employer in the application of this specification

Table 1: Categories of registration

Profession	Category of registration	Act
Architectural	Architect, Senior Architectural Technologist, Architectural Technologist or Architectural Draughtsperson	Architectural Profession Act of 2000 (Act No. 44 of 2000)
Construction project management	Construction Project Manager	Project and Construction Management Professions Act of 2000 (Act No. 48 of 2000)
Construction management	Construction Manager	
Engineering	Engineer, Engineering Technologist, Engineering Technician or Certificated Engineer	Engineering Profession Act of 2000 (Act No. 46 of 2000)
Landscape Architectural	Landscape Architect, Landscape Technologist, Landscape Technician or Landscape Assistant	Landscape Architectural Profession Act of 2000 (Act No. 45 of 2000)
Quantity surveying	Quantity surveyor	Quantity Surveying Profession Act of 2000 (Act No. 49 of 2000)
Scientists	Natural scientists	Natural Scientific Professions Act (Act No. 27 of 2003)
Surveying	Land surveyor, Engineering surveyor or Technician engineering surveyor	Professional and Technical Surveyors' Act (Act No. 40 of 1984)

professional service contract

contract for the provision of services with the skill and care normally delivered by professionals

Sector Education and Training Authority (SETA)

an institution established under section 9 of the Skills Development Act, Act 97 of 1998 and which has the responsibility under this Act to register learners on learning programmes

service contract

contract for the provision of labour or work, including knowledge-based expertise, carried out by hand or with the assistance of equipment and plant

site

means the land or place made available by the employer, for the purposes of the contract or order, on, under, over, in or through which the works or services are to be executed

skills development agency

an agency which performs some or all of the functions set out in section 4.1.4.

statutory council

a council as established under the

- a) South African Council for the Architectural Profession, established by the Architectural Profession Act of 2000 (Act No. 44 of 2000);
- b) South African Council for the Project and Construction Management Professions, established by the Project and Construction Management Professions Act of 2000 (Act No. 48 of 2000);
- c) Engineering Council of South Africa, established by the Engineering Profession Act of 2000 (Act No. 46 of 2000);
- d) South African Council for the Landscape Architectural Profession, established by the Landscape Architectural Profession Act of 2000 (Act No. 45 of 2000);
- e) South African Council for the Quantity Surveying Profession, established by the Quantity Surveying Profession Act of 2000 (Act No. 49 of 2000);
- f) South African Council for Professional and Technical Surveyors, established by the Professional and Technical Surveyors' of 2000 (Act No. 40 of 1984); or
- g) South African Council for Natural Scientific Professions, established by the Natural Scientific Professions Act (Act No. 27 of 2003):

structured mentorship

mentorship provided by a person who is registered in a suitable category of professional registration by a statutory council or professional body which leads and directs a candidate towards professional registration

structured work experience learning component

component of learning in an occupational qualification or for professional designation whereby a learner is mentored by a qualified, and where required, registered mentor in the application and integration of the knowledge and practical skills learnt, under supervision, in the actual context of a workplace in accordance with the prescripts set by the relevant qualifying authority, professional body or statutory council.

supervisor

a supervisor is a person in the particular workplace charged with the responsibility of allocating workplace tasks to a learner that are aligned to the prescriptions of their learning programme and of overseeing and reporting on that learning using a formally agreed record keeping system

supply contract

contract for the provision of goods and associated services including design

work integrated learning

the workplace learning component required by learners completing a national diploma at a University of Technology or Comprehensive University.

b) 3 Requirements

e) 3.1 Contract skills development goal (CSDG)

3.1.1 The contractor shall attain or exceed the contract skills development goal in the performance of the contract or the execution of an order.

3.1.2 The contract skills development goal shall be not less than:

- a) the contract amount in millions of Rand multiplied by:
 - 1) the relevant number of hours per million Rand expenditure contained in Table 2 in the case of engineering and construction works contracts for the applicable class of construction works used in the application of the Construction Industry Development Regulations issued in terms of the Construction Industry Development Board Act of 2000; or
 - 2) 300 in the case of a service contract; or
 - 3) 100 in the case of a professional service contract or a supply contract; or
- b) the hours tendered in the preference schedule or the quantum agreed in the scope of work of the contract or order.

Example: The contract amount for an engineering and construction works contract in the GB class of construction works is R65,7 million. The contract skills development goal is $65,7 \times 250 = 16\,425$ hours.

Table 2: Number of hours per million Rand expenditure in an engineering and construction work contract

Class of construction works as identified in terms of Regulation 25(3) of the Construction Industry Regulations 2004		Number of hours per million Rand expenditure
Designation	Description	
CE	Civil engineering	125
CE or GB	Civil Engineering or general building	190
EE	Electrical engineering works (buildings)	125
EP	Electrical engineering works (Infrastructure)	125
GB	General building	250
ME	Mechanical engineering works	125
SB	Specialist	125

3.1.5 Where required in terms of the contract or order, a specified proportion of the learners and candidates shall be selected from a list of persons in the employ of the state contained in the scope of work of the contract or order under the terms and conditions embodied therein.

NOTE: The contract skills development goal can be achieved through the direct employment of persons who are developing skills that result in nationally accredited outcomes, through the engagement of subcontractors who employ such persons or, where specifically required, the provision of work place opportunities to employees of the state.

f)

g) 3.2 Achieving the contract skills development goal (CSDG)

3.2.1 The contractor shall achieve the measurable contract skills development goal by providing one or a combination of any of the following in relation to work directly related to the contract or order:

Method 1: structured work experience learning component opportunities for learners towards the attainment of a part qualification or a full occupational qualification;

Method 2: structured work experience learning component opportunities for apprentices or other artisan learners towards the attainment of a trade qualification leading to a listed trade (GG No. 35625, 31 August 2012) subject to at least 60% of the artisan learners being holders of public FET college qualifications;

Method 3: work integrated learning opportunities for University of Technology or Comprehensive University students completing their national diplomas;

Method 4: structured work experience opportunities for candidates towards registration in a professional category by a recognized professional body or statutory council.

3.2.2 No single method, except in the case of professional service contracts, shall contribute more than 75 percent of the contract skills development goal, Method 1 shall not contribute to more than 25 percent of the contract skills development goal in engineering and construction works or service contract and related orders.

3.2.3 Not more than one method may be applied to any individual in the calculation of the contract skills development goal.

NOTE: The principle is that an individual can only be counted once towards the CSDG.

h) 3.3 Contract skills development goal credits

3.3.1 Credits towards the contract skills development goal shall be granted by summing the hours of opportunities provided in accordance with this specification.

3.3.2 No more than 8 hours may be claimed for any 24 hour period for any individual.

3.3.3 Contract skills development goal credits shall be reduced to the extent that they fail to comply with the requirements of this specification.

i) 3.4 Denial of credits

Credits towards the contract skills development goal shall be denied should:

- a) the opportunities not be provided on site or the opportunities cannot be directly linked to the contract or order;
- b) the following not be provided:
 - 1) the required contract compliance baseline plan, an interim contract compliance report or a final contract compliance report;
 - 2) the required mentorship plan for a candidate;
 - 3) the required training plan for learners;
 - 4) the training reports covering a period; or
 - 5) the required records, specified documents and signatures;

- c) the structured mentorship be found not to be in accordance with the requirements of the applicable professional body, statutory council or qualifying authority;
- d) the structured work experience learning component be found not to be in accordance with the curriculum requirements of the part qualification or qualification or prescription for professional registration for which the learner is registered;
- e) conditions of employment and rates or allowances for learners not be in accordance with legislative provisions;
- f) the contractor does not maintain the required training records or an audit reveals that there is insufficient information to substantiate claims for credits; and
- g) a learner, learner artisan or candidate fails to present their credentials for assessment when they have, in the opinion of the mentor, sufficient structured work experience or structured mentorship to do so.

c) 4 Compliance with requirements

j) 4.1 General

4.1.1 The contractor shall submit to the employer's representative:

- a) within 30 days of the contract coming into effect or the issuing of an order, a contract compliance base line training plan (see Annex A) taking into account the skills mix and type of workers that are to be engaged;
- b) interim contract compliance training reports (see Annex A) at intervals which do not exceed 3 months;
- c) a final contract compliance training report (see Annex A) within 15 days of reaching completion, final delivery or the end of the service as relevant; and
- d) a report which provides a breakdown of the number of hours reported in each interim and in the final contract compliance report into black people and women and people with disabilities.

NOTE: The Code of Good Practice on Key Aspects of Disability in the Workplace issued in terms of Employment Equity Act No 55, OF 1998 provides guidance on establishing who are people with disabilities.

4.1.2 The contractor shall keep records of the name and identity number, hours worked, payments made to, registration particulars towards a part qualification or occupational qualification and particulars of opportunities offered to persons who are provided with work experience learning component opportunities which contribute to the contract skills development goal and any other training records required by or which demonstrate compliance with this specification. The contractor shall allow the employer's representative to inspect or audit such training records at any time within working hours.

4.1.3 The employer's representative shall undertake suitable random audits on records to confirm compliance with requirements.

4.1.4 Where learners are sourced through a Skills Development Agency (SDA), the contractor shall enter into a contract agreement with one or more SDAs of their choice that is participating in the implementation of this specification to, as relevant:

- a) facilitate placement of learners for training opportunities;
- b) prepare training plans for registered learners, including details of the scope of experiential work to be covered and expected outcomes;
- c) register learners with the appropriate sector Education and Training Authority established in terms of the Skills Development Act of 2008 (Act 37 of 2008);
- d) manage all the employment functions of learners such as payment of stipends, contributions to the Unemployment Insurance Fund, Workman's Compensation, provision of personal protective clothing, trade specific tools, etc.;
- e) liaise with the training co-ordinators to monitor onsite training progress of learners;
- f) liaise with the training co-ordinators to arrange for summative assessments at appropriate stages of the training; and

g) liaise with the training co-ordinators to prepare reports for the employer or employer's representative.

k) 4.2 Structured workplace learning opportunities for learners

4.2.1 Structured work experience learning component opportunities shall be aligned to the curriculum requirements set for the particular part or full occupational qualification or professional designation for which the learner is registered.

4.2.2 A responsible supervisor shall be appointed to allocate learning tasks, under the guidance of a qualified person, to learners in line with their training plans

4.2.3 Mentoring associated with structured work experience learning component for artisan learners shall be undertaken by an artisan qualified in the applicable trade with a minimum of 3 years of trade related experience. The number of artisan learners mentored by a single mentor shall, unless otherwise permitted by the National Artisan Moderation Body, not exceed 4 at any one time.

4.2.4 Mentoring associated with structured work experience learning component for learners leading to a part or an occupational qualification other than artisan learners shall be undertaken by a person qualified in the applicable discipline with a minimum of 3 years of experience.

4.2.5 The contractor or service provider shall submit to the employer's representative, in respect of each learner:

- a) within one month of commencing work directly related to the contract or order, a workplace training plan together with name of the learner's mentor and supervisor
- b) within three months of commencing work directly related to the contract or order:
 - 1) proof of registration as a learner with the relevant SETA; and
 - 2) a copy of the mentorship agreement entered into with the learner or the company mentorship agreement entered into with the relevant qualified agency;
- c) within two weeks of updating a workplace training plan, the revised workplace training plan; and
- d) a quarterly progress report and a final report at the end of the structured mentorship period including a log of exposure and interactions with the mentor in sufficient detail to demonstrate compliance with requirements, signed off by the mentor, the supervisor and the learner.

4.2.6 Learners shall be required by the mentor to complete training reports required by the relevant qualifying authority whenever a substantial activity or training period has been completed.

4.2.7 The mentor and supervisor shall sign off all reports and logbooks to allow the learner to move to other projects or employment and continue on the path towards qualification and, where relevant registration, where the work related to the contract ends for whatever reason prior to the learner gaining sufficient experience for final assessment.

l) 4.3 Structured mentorship opportunities for candidates

m)

4.3.1 Mentoring associated with structured work experience for candidates shall be in accordance with the prescripts of the relevant professional body or statutory council.

4.3.2 The contractor shall:

- n)
- a) appoint a supervisor who is actively engaged in work directly associated with the contract to issue tasks, oversee their implementation and provide input to the candidate on an on-going basis;
- b) identify a suitable mentor for the candidate, if such candidate does not have a mentor, who shall enter into a mentoring agreement with the candidate or the company as required by the professional body or statutory council; and
- c) issue each candidate with a portfolio of evidence file which is to be kept up to date with all the documentation issued or prepared including the workplace training plan and all revisions thereof as well as copies of the logbook entries and training period reports;

4.3.3 The mentor shall provide and update from time to time a workplace training plan for a candidate outlining the activities in which the candidate will be involved that includes activities required by the relevant statutory

council. The mentor shall require candidates to maintain a logbook issued by the relevant statutory council. The mentor shall sign off such logbook at quarterly presentations and progress review meetings.

NOTE: The mentor should ensure where the duration of the contract or order exceeds the minimum time to register in a professional category of registration that candidates are exposed to the full range of activities and work towards assuming the full level of responsibility recommended by the relevant statutory council. This may require rotations and secondments.

4.3.4 The contractor or service provider shall submit to the employer's representative, in respect of each candidate:

- a) within one month of commencing work directly related to the contract or order:
 - 1) a workplace training plan together with name of the candidate's mentor and supervisor
 - 2) proof of registration as a candidate with the relevant professional body or statutory council; and
 - 3) a copy of the mentorship agreement entered into with the candidate or the company mentorship agreement entered into with a professional body or statutory council;
- b) within two weeks of updating a workplace training plan, the revised workplace training plan.
- c) a quarterly progress reports and a final report at the end of the structured mentorship period including a log of exposure and interactions with the mentor in sufficient detail to demonstrate compliance with requirements, signed off by the mentor, the supervisor and the candidate.

4.3.5 Candidates shall be required by the mentor to complete training reports required by the relevant statutory council whenever a substantial activity or training period has been completed.

4.3.6 The mentor and supervisor shall sign off all reports and logbooks to allow the candidate to move to other projects or employment and continue on the path towards registration where the work related to the contract ends for whatever reason prior to the candidate gaining sufficient experience for registration.

d) 5 Records

5.1 The contractor shall submit all the documentation required in terms of clause 4 in a timely manner.

5.2 The employer's representative shall certify the value of the credits counted towards the contract skills development goal, if any, whenever a claim for payment is issued to the employer, and shall notify the contractor of this amount.

5.3 The contractor shall, upon termination of the opportunities provided in order to satisfy the contract skills development goal, certify the quantum and nature of the opportunity and submit the certificate, counter-certified by the relevant individual, to the employer's representative for record-keeping purposes.

e) 6 Sanctions

In the event that the contractor fails to substantiate that any failure to achieve the contract skills development goal was due to reason beyond the contractor's control which may be acceptable to the employer, the sanctions provided for in the contract or order shall apply.

f) Annex A: Skills compliance plans
g)
 (Normative)

Skills compliance base line plan		
Name of contractor:		
Contact person:	Telephone:	
Address:	Cell phone:	
	Email:	
Contract / order number:	Start date for contract / order:	
Contract title:		
Contract skills development goal (CSDG) (tick appropriate box)		
<input type="checkbox"/> Tendered / contracted CSDG = hours		
<input type="checkbox"/> Minimum CSDG calculated in accordance with standard		
Minimum CSDG calculated in accordance with the standard (complete only if applicable)		
Contract type (tick appropriate box):	Contract amount	
<input type="checkbox"/> professional service	excl VAT	R
<input type="checkbox"/> service	Less expenses (if any)	R
<input type="checkbox"/> engineering and construction works	Less allowances	R
CIDB Class of construction works, if applicable	Contract amount	R
.		
Contract amount expressed in millions of Rand R m ①		
Number of hours per million Rand expenditure from sub-clause 3.1.2 of the <i>Standard for developing skills that result in nationally accredited outcomes through infrastructure contracts</i> = ②		
Minimum contract skills development goal which the contractor is required to achieve (Gmin)		
= ① x ② = x = hours		
I intend achieving the CSDG as follows:		
<input type="checkbox"/> Method 1: structured work experience learning component opportunities towards a part or a full occupational qualification	 hours
<input type="checkbox"/> Method 2: structured work experience learning opportunities for apprentices or other artisan learners	 hours
<input type="checkbox"/> Method 3: work integrated learning opportunities for University of Technology or Comprehensive University national diploma students	 hours
<input type="checkbox"/> Method 4: structured work experience opportunities for candidates towards registration in a professional category of registration	 hours
	 hours
Total		

The undersigned, who warrants that he / she is duly authorised to do so on behalf of the Contractor, confirms that the contents of this plan are within my personal knowledge and are to the best of my belief both true and correct.

Signed

Date

Name

Position

Skills compliance report (tick appropriate box)		Date:		<input type="checkbox"/> Interim report		<input type="checkbox"/> Final report		
Name of contractor:								
Contact person:				Telephone				
Address:				Cell phone				
				email				
Contract / order number:				Start date for contract / order:				
Contract title:								
Contract skills development goal (CSDG) hours								
Method 1: structured workplace experience learning component opportunities towards a part or a full occupational qualification								
Employed by contractor								
Name	Identity or passport number	Cell or telephone number	Part or full occupational qualification NQF ref. no.	Student number	SETA with whom learner is registered	Dates for engagement on work related to contract		Total hours
						Start	End	
Employed by subcontractor: (state name)								
Name	Identity or passport number	Cell or telephone number	Part or full occupational qualification NQF ref. no.	Student number	SETA with whom learner is registered	Dates for engagement on work related to contract		Total hours
						Start	End	
Method 2: structured work experience learning component opportunities for apprentices or other artisan learners								
Employed by contractor								
Name	Identity or passport number	Cell or telephone number	Listed trade	National artisan learner data base registration number (where available)	SETA with whom the learner is registered	Dates for engagement on works related to contract		Total hours
						Start	End	
Employed by subcontractor: (state name)								
Name	Identity or passport number	Cell or telephone number	Listed trade	National artisan learner data base registration number (where available)	SETA with whom the learner is registered	Dates for engagement on works related to contract		Total hours
						Start	End	
Method 3: work integrated learning opportunities for University of Technology (UOT) or Comprehensive University (CU) diploma students								

Employed by contractor								
Name	Identify or passport number	Cell or telephone number	Diploma	Learner registration number	UOT/CU with whom the learner is registered	Date for engagement on contract		Total hours
						Start	End	

Employed by sub-contractor								
Name	Identify or passport number	Cell or telephone number	Diploma	Learner registration number	UOT/CU with whom the learner is registered	Date for engagement on contract		Total hours
						Start	End	

Method 4: structured work experience opportunities for candidates towards registration in a professional category of registration

Employed by contractor							
Name	Identity or passport number	Cell or telephone number	Statutory council particulars		Dates for engagement on work related to contract		Total hours
			Title	Registration number	Start	End	

Employed by subcontractor							
Name	Identity or passport number	Cell or telephone number	Statutory council particulars		Dates for engagement on work related to contract		Total hours
			Title	Registration number	Start	End	

The undersigned, who warrants that he / she is duly authorised to do so on behalf of the Contractor, confirms that the contents of this plan are within my personal knowledge and are to the best of my belief both true and correct.

Signed

Date

Name

Position

h) Annex B: Incorporating this specification in a procurement document

o) B1 General

B1.1 The following clause should be added to the scope of work of a contract or order to establish requirements:

Skills development requirements

The contractor shall achieve in the performance of the contract the contract skills development goal established in the Department of Higher Education and Training's *Standard for developing skills that result in nationally accredited outcomes through infrastructure contracts* (September 2012)

Note: The term contractor may need to be changed to "consultant" or "professional service provider" depending upon the term that is used in the form of contract that is adopted. The term "performance of the contract" may need to be replaced with "execution of an order" where the scope of work forms part of an order.

B1.2 Where an employer requires that employees of the state be seconded to the contractor in order to be provided with work integrated learning opportunities, structured workplace experience opportunities or structured mentorship opportunities in accordance with the provisions of this standard, the following clause should be included in the scope of work:

The specified proportion of employees of the state is %. Work integrated learning opportunities / structured workplace experience opportunities / structured mentorship opportunities shall be offered to any of the persons identified in Annexure 1. Persons selected by the contractor from the list in Annexure 1 shall be seconded to the contractor under the following terms and conditions:

.....

NOTE: The annexure should inform the contractor of the opportunities which the named employees of the state require through the contract or order in order to attain a nationally accredited outcome.

p) B2 Financial incentives

Financial incentives may be offered to contractors should they exceed a key performance indicator (KPI) in the performance a contract in the form of a contract skills development goal in accordance with the requirements of this standard which can be agreed to either through a negotiation process before or after a contract or order is awarded.

Financial incentives should not be confused for preferences for rewarding contractors for offering to achieve a deliverable and a financial penalty (low performance damages) for failing to deliver on obligations. The intention for offering financial incentives for the attainment of KPIs is to encourage, rather than coerce, the contractor to meet and exceed the employer's objectives.

Financial incentives can be formulated in a number of ways. The most common way is to make them linearly proportional to increases in contract participation goals. Stepped incentives may also be used. Consideration should be given to capping the quantum of the financial incentive.

Option X20 (Key Performance Indicators) of the NEC3 Engineering and Construction Contract, NEC3 Professional Service Contract and the NEC3 Term Service Contract makes provision for a contractor to be paid an amount stated in an incentive schedule if the target stated for a key performance indicator is improved upon or achieved.

Additional conditions of contract need to be framed and included in the contract data where use is made of other forms of contract.

Note: Financial incentives are usually used where tenderers are not invited to tender contract skills development goals, but are required to accept a minimum contract skills development goal and are rewarded for performance beyond the minimum.

q) B3 Sanctions

Sanctions should be provided for in the contract in the event that the contractor fails to substantiate that any failure to achieve the contract participation goal was due to quantitative under runs, the elimination of items, or any other reason beyond the contractor's control which may be acceptable to the employer.

Appropriate action should be taken by employers against tenderers who are awarded contracts in preference to others on a fraudulent basis or against contractors who fail to achieve their contractual obligations relating to the development of skills. Employers have a number of sanctions and contractual remedies available to address such situations, including the imposition of a financial penalty (low performance damages) more severe than the financial preference calculated at the time when tenders were evaluated or more severe than complying with contractual obligations or not awarding future orders in terms of framework agreements.

C3.5 MANAGEMENT

C3.5.1 MANAGEMENT MEETINGS

The following meetings will be required as minimum for the management of the contract.

- (a) Monthly client site meeting (using standard agenda for management control).
- (b) Technical meetings as required for each phase of the work.
- (c) Monthly safety meetings in terms of the OHS requirements.
- (d) Weekly progress meetings

C3.5.2 QUALITY CONTROL

Contractor to supply details of quality plan and procedures. These shall include:

- Accommodation of traffic.
- Inspection and test plans.
- Approval process.
- Hold-points.
- Milestones.

C.3.4.3.5

PROVISION FOR SOCIAL CONSULTANT

SPECIFICATIONS FOR SOCIAL CONSULTANT

Duties of a Social Consultant

C.3.4.3.1 PHASE 1: PLANNING & MOBILISATION

- Stakeholder identification & consultation
 - (i) Arranging meetings with stakeholders
 - (ii) Attending stakeholder meetings
 - (iii) Report monthly progress
- PSC Establishment
 - (i) Arrange meetings with stakeholders to facilitate the selection of PSC
 - (ii) Arrange and conduct workshops with PSC

C.3.4.3.2 PHASE 2: IMPLEMENTATION

- Facilitate recruitment of Beneficiaries
 - (i) Arrange meetings with PSC
 - (ii) Confirm & Consolidate lists from all affected wards/villages,
 - (iii) Prepare a register of all beneficiaries
- Workshop Team Leaders
 - (i) Conduct workshop (terms of reference, maintaining attendance register, Disciplinary procedures, Contract of employment, Reporting)
 - (ii) progress reports in a prescribed format
- Arrange and Monitor Training of Beneficiaries
 - (i) facilitate the appointment of training providers
 - (ii) report progress in a prescribed format
- Project Site Monitoring
 - (a) site visits to monitor the welfare of Beneficiaries which are the following:
 - (b) provision of drinking water and sanitation facilities
 - (c) provision of safety clothing and injuries
 - (d) payment of wages
 - (e) on-going appointment and termination of labourers
 - (f) conflict /Dispute resolution
 - (g) update labour statistics & compile monthly report in a prescribed format
- Monthly Progress meeting
 - Arrange PSC meeting
 - Minute proceedings and presents reports

C.3.4.3.3 FINAL PHASE: COMPLETION & HAND OVER

- Dissolve PSC
 - Arrange for the last PSC meeting after project completion (outstanding payments, PSC reimbursement, training certificates, UIF, Compensation, etc)
- Project Evaluation
 - Review projects in terms of objectives, successes, failures and compile evaluation
- Closure report
 - submit four (4) copies of close-out report

C3.4.3.5.4

MEASUREMENT AND PAYMENT

ITEM

UNIT

B100.01 Provision for Social Consultant and establishment

- | | |
|---|-----------------|
| (a) Provision for social facilitation | Provisional sum |
| (b) Contractor's handling costs, profit and all other charges in respect of subitem B100.01 above | percentage (%) |

PART C4: SITE INFORMATION

- c4.1 site information 272218
- c4.2 LOCALITY PLAN 273219

C4.1 SITE INFORMATION

C4.1.1 General

The Roads to be maintained comprises of all gravel and surfaced roads within the Local Municipality as prioritised and agreed upon with the Maintenance Manager of the Department.

C4.1.2 Climate and Weather

The average monthly maximum air temperatures are respectively 29.4°C in January and 29.3°C in February. The average monthly minimum air temperature is 9°C in June and 8.9°C July.

Construction of certain works, such as seals, asphalt overlays and concrete is constrained with regards to air and road temperatures. It is evident that during the period June to August seal work will be constrained with the minimum temperature falling below 5°C on a number of days. Over the period April to September a number of days experience temperatures below 10°C. These low temperature conditions should be taken into consideration during the programming of the seal and concrete works.

The average annual rainfall for the area is 754 mm. The rainy season starts in October and lasts until March with the average maximum rainfall reached in the period November to March. Winters are dry and cold with an average rainfall for the months April to September contributing approximately 14.4 percent to the average annual rainfall. The driest months are May to August. It should be noted that this particular area's rainfall climate is prone to significant storms and thundershowers. Thus the average rainfall of 754 mm should not be viewed as insignificant due to the intensity of the rainfall experienced. Maximum 24-hour rainfall figures of in excess of 252 mm have occurred and should be considered when programming the project.

C4.1.3

Bituminous material

a) Asphalt

Asphalt material can be obtained from commercial sources in EPHRAIM MOGALE

b) Binders

Bitumen emulsion, modified and unmodified binders can be obtained from commercial sources in the Gauteng area.

C4.1.4

Water

Water for construction purposes must be obtained by the Contractor.

All water used on site will be tested by the contractor for the following:

- a) Compatibility with bitumen emulsions prior to the on-site dilution of any bitumen emulsions
- b) Compatibility with cement for stabilization purposes

C4.2 LOCALITY PLAN

See the following colour page for the Locality Plan.