



community safety, roads & transport

Department of
Community Safety, Roads & Transport
FREE STATE PROVINCE

FREE STATE DEPARTMENT COMMUNITY SAFETY, ROADS AND TRANSPORT

TENDER NO: CSR&T/BID16/2023/24

CLOSING DATE: 24-OCTOBER-2023

**APPOINTMENT OF CONSTRUCTION COMPANY FOR
THE SPECIAL MAINTENANCE PRIMARY ROAD P30/1 KOPPIES TO SASOLBURG FOR
A PERIOD OF 30 MONTHS.**

A CIDB GRADING MINIMUM: 9CE

VOLUME 1

Prepared for:

**FREE STATE DEPARTMENT OF COMMUNITY
SAFETY, ROADS & TRANSPORT**

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Prepared by:

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NAME OF BIDDER

BID AMOUNT

LIST OF CONTRACT DOCUMENTS

The following documents form part of this contract:

Volume 1: The **GCC2015** - General Conditions of Contract for construction works, 3rd Edition 2015, issued by the South African Institute of Civil Engineering (see Note 1 below).

Volume 2: The standard specifications on which this contract is based are the **“Standard Specifications for Road and Bridge Works for State Road Authorities – October 2020 Edition”** prepared and drafted by COTOWhich the contractor will purchase himself/herself (see Note 2 below).

Volume 3: The **SARTSM regulation** for Road Signs and Road Marking Manual.

Volume 4: The **Project Document**, containing the tender notice, Conditions of Tender, Tender Data, Returnable Schedules, general and particular conditions of contract, project specifications, Pricing Schedule, Form of offer and Site Information is issued by the Employer (see Note 3 below).

The Employer's Form of Acceptance and any correspondence from the selected tenderer, performance security-demand guarantee and all addenda issued during the period of tender will also form part of this volume once a successful tenderer has been appointed.

This volume also includes the Environmental Management Plan, Health and Safety Compliance and details of the Materials Investigation (if applicable).

Notes to Tenderer:

Note 1: Volume 1 is obtainable from SAICE, Private Bag X200, Halfway House, 1685.
Tel: (011) 8055947/8, e-mail: civilinfo@saice.org.za.

Note 2: Volume 2 is obtainable from SAICE, Private Bag X200, Halfway House, 1685.
Tel: (011) 8055947/8, e-mail: civilinfo@saice.org.za.

Note 3: Volume 4 is issued at tender stage by the Head: Department of Police, Roads and Transport and contains the following files:

At Contract stage Volume 4 will be a bound signed paper copy containing the following documents:

- Returnable schedules relevant to the project
- Agreements and Contract Data
- Pricing Data
- Scope of Work
- Site Information

Note 4: Information provided by a tenderer over and above the above elements of volume 4 shall be treated as information only and will only be bound into the document if the tenderer notes on Form A4: Schedule of Variations or deviations that the information has a bearing on the tender price.

Note 5: For alternative offers the tenderer shall submit the following additional documentation, clearly marked as ALTERNATIVE, in a separate neatly bound file in the following order:

- Form of Offer and state “Alternative Form of Offer”;
- All returnable schedules applicable to alternative offer, as is appropriate;
- Alternative Pricing Schedule;
- Other relevant information.

SPECIAL MAINTENANCE OF PRIMARY ROAD P30/1 KOPPIES TO SASOLBURG

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FOREWORD

This document consists of two sections, namely the **TENDER** and the **CONTRACT**.

THE TENDER consists of two parts, namely:

- **T1:Tendering Procedures** Volume 1
- to be complied with by every Tenderer submitting a tender offer,

and
- **T2: Documents to be returned by the Tenderer** Volume 1
- including the returnable schedules and forms to be completed by each Tenderer, some of which will eventually be incorporated into the contract between the successful Tenderer and the Employer.

THE CONTRACT consists of four parts, namely:

- **C1:Agreements and Contract Data** Volume 1
- **C2 :Pricing Data**Volume 1
-
- **C3:Scope of Work** Volume 1
(Specifications and Project Specifications)

and
- **C4:Site Information** Volume 1

SPECIAL MAINTENANCE OF PRIMARY ROAD P30/1 KOPPIES TO SASOLBURG

THE TENDER

PART T1 : TENDERING PROCEDURES

PART T1: TENDERING PROCEDURES

CONTENTS

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T1.1 TENDER NOTICE AND INVITATION TO TENDER

T1.1.1 The Department of Community, Roads and Transport, Free State Provincial Government, invites tenders for **SPECIAL MAINTENANCE OF PRIMARY ROAD P30/1 KOPPIES TO SASOLBURG OF 61km FOR THIRTY (30) MONTHS**

T1.1.2 Tenderers should have a **CIDB** Contractor grading designation of **9CE** .

T1.1.3 Tenderers must be registered with the **CIDB** in a **CE** class of construction works.

T1.1.4 Preferences

The Tender will be subjected to **B-BBEE** preferential procurement policy framework as amended.

A minimum of 30% of the Contract Value **MUST** be sub-contracted to **local Contractors**.

Evaluation and Adjudication of bids: bid will be evaluated and adjudicated in terms of the Department of Community, Roads and Transport *Supply Chain Management Policy and Preferential Procurement Framework Act No. 5 of 2010*. *The 90/10 in preferential procurement points system as outlined in the bid document will apply. Preferential points will be given in terms of the Preferential Procurement Regulations, 2017.*

T1.1.5 Tender Documents

- The tender documents will be given to the respective contractor's on the day of tender briefing

Queries relating to the issues of these documents may be addressed to:

Mr V Ntaka

Tel no. 051 409 8687

Fax no. 051 409 8683

E-mail :ntakav@freetrans.gov.za

T1.1.6 A compulsory clarification meeting with representatives of the Employer will take place at the Kroonstad Regional office **10th AVENUE INDUSTRIA,KROONSTAD 9499,06th October 2023, at 11H00am.**

T1.1.7 The closing time, date and venue for receipt of tenders will be **11H00 on 24th October 2023** at the Ground Floor of Perm Building,ChalotteMaxeke, Bloemfontein **NO LATE TENDERS WILL BE ACCEPTED.**

T1.1.8 Telegraphic, telephonic, telex, facsimile and late tenders will not be accepted. Requirements for sealing, addressing, delivery, opening and assessment of tenders are stated in the Tender Data.

T1.2 STANDARD CONDITIONS OF TENDER

The Conditions of Tender are the Standard Conditions of Tender as contained in Annexure F of the CIDB Standard for Uniformity in Construction Procurement.

The Standard Conditions of Tender make 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 Standard Conditions of Tender.

Each item of data given below is cross-referenced to the clause in the Standard Conditions of Tender to which it mainly applies.

**Clause
number****Wording****F.1 GENERAL****F.1.1 Actions**

The Employer and each tenderer submitting a tender offer shall comply with these conditions of tender. In their dealings with each other, they shall discharge their duties and obligations as set out in F.2 and F.3, timeously and with integrity, and behave equitably, honestly and transparently.

F.1.2 Tender documents

The documents issued by the Employer for the purpose of a tender offer are listed in the Tender Data.

F.1.3 Interpretation

F.1.3.1 The Tender Data and additional requirements contained in the Tender Schedules, that are included in the returnable documents, are deemed to be part of these Conditions of Tender.

F.1.3.2 These Conditions of Tender, the Tender Data and Tender Schedules, which are only required for tender evaluation purposes, shall not form part of any contract arising from the invitation to tender.

F.1.3.3 For the purposes of these conditions for the calling for expressions of interest, the following definitions apply:

- a) **comparative offer** means the Tenderer's financial offer after the factors of non-firm prices, all unconditional discounts and any other tendered parameters that will affect the value of the financial offer have been taken into consideration
- b) **corrupt practice** means the offering, giving, receiving or soliciting of anything of value to influence the action of the Employer or his staff or agents in the tender process; and
- c) **fraudulent practice** means the misrepresentation of the facts in order to influence the tender process or the award of a contract arising from a tender offer to the detriment of the Employer, including collusive practices intended to establish prices at artificial levels

F.1.4 Communication and Employer's Agent

Each communication between the Employer and a Tenderer shall be to or from the Employer's Agent only, and in a form that can be read, copied and recorded. Writing shall be in the English language.

The Employer shall not take any responsibility for non-receipt of communications from or by a Tenderer. The name and contact details of the Employer's Agent are stated in the Tender Data.

F.1.5 The Employer's right to accept or reject any tender offer

F.1.5.1 The Employer may accept or reject any variation, deviation, tender offer, or alternative tender offer, and may cancel the tender process and reject all tender offers at any time before the formation of a contract. The Employer shall not accept or incur any liability to a Tenderer for such cancellation and rejection, but will give reasons for such action upon written request to do so.

F.1.5.2 The Employer may not, subsequent to the cancellation or abandonment of a tender process or the rejection of all tender offers, re-issue a tender covering substantially the same scope of work within a period of six months unless only one tender was received and such tender was returned unopened to the Tenderer.

F.2 TENDERER'S OBLIGATIONS**F.2.1 Eligibility**

Submit a tender offer only if the Tenderer complies with the criteria stated in the Tender Data and the Tenderer, or any of his principals, is not under any restriction to do business with Employer.

F.2.2 Cost of tendering

Accept that the Employer will not compensate the Tenderer for any costs incurred in the preparation and submission of a tender offer, including the costs of any testing necessary to demonstrate that aspects of the offer satisfy requirements.

F.2.3 Check documents

Check the tender documents on receipt for completeness and notify the Employer of any discrepancy or omission.

F.2.4 Confidentiality and copyright of documents

Treat as confidential all matters arising in connection with the tender. Use and copy the documents issued by the Employer only for the purpose of preparing and submitting a tender offer in response to the invitation.

F.2.5 Reference documents

Obtain, as necessary for submitting a tender offer, copies of the latest versions of standards, specifications, Conditions of Contract and other publications, which are not attached but which are incorporated into the tender documents by reference.

F.2.6 Acknowledge addenda

Acknowledge receipt of addenda to the tender documents, which the Employer may issue, and if necessary apply for an extension to the closing time stated in the Tender Data, in order to take the addenda into account.

F.2.7 Site visit and clarification meeting

Attend, where required, a site visit and clarification meeting at which Tenderers may familiarize themselves with aspects of the proposed work, services or supply and raise questions. Details of the meeting(s) are stated in the Tender Data.

F.2.8 Seek clarification

Request clarification of the tender documents, if necessary, by notifying the Employer at least five working days before the closing time stated in the Tender Data.

F.2.9 Insurance

Be aware that the extent of insurance to be provided by the Employer (if any) may not be for the full cover required in terms of the Conditions of Contract identified in the Contract Data. The Tenderer is advised to seek qualified advice regarding insurance.

F.2.10 Pricing the tender offer

F.2.10.1 Include in the rates, prices, and the tendered total of the prices (if any) all duties, taxes (except Value Added Tax (VAT), and other levies payable by the successful Tenderer, such duties, taxes and levies being those applicable 14 days before the closing time stated in the Tender Data.

F.2.10.2 Show VAT payable by the Employer separately as an addition to the tendered total of the prices.

F.2.10.3 Provide rates and prices that are fixed for the duration of the contract and not subject to adjustment except as provided for in the Conditions of Contract identified in the Contract Data.

F.2.10.4 State the rates and prices in Rand unless instructed otherwise in the Tender Data. The Conditions of Contract identified in the Contract Data may provide for part payment in other currencies.

F.2.11 Alterations to documents

Not make any alterations or additions to the tender documents, except to comply with instructions issued by the Employer, or necessary to correct errors made by the Tenderer. All signatories to the tender offer shall initial all such alterations. Erasures and the use of masking fluid are prohibited.

F.2.12 Alternative tender offers

F.2.12.1 Submit alternative tender offers only if a main tender offer, strictly in accordance with all the requirements of the tender documents, is also submitted. The alternative tender offer is to be submitted with the main tender offer together with a schedule that compares the requirements of the tender documents with the alternative requirements the Tenderer proposes.

F.2.12.2 Accept that an alternative tender offer may be based only on the criteria stated in the Tender Data or criteria otherwise acceptable to the Employer.

F.2.13 Submitting a tender offer

F.2.13.1 Submit a tender offer to provide the whole of the works, services or supply identified in the Scope of Work, unless stated otherwise in the Tender Data.

F.2.13.2 Return all returnable documents to the Employer after completing them in their entirety, either electronically (if they were issued in electronic format) or by writing in black ink.

F.2.13.3 Submit the parts of the tender offer communicated on paper as an original plus the number of copies stated in the Tender Data, with an English translation of any documentation in a language other than English, and the parts communicated electronically in the same format as they were issued by the Employer.

F.2.13.4 Sign the original and all copies of the tender offer where required in terms of the Tender Data. The Employer will hold all authorized signatories liable on behalf of the Tenderer. Signatories for Tenderers proposing to contract as joint ventures shall state which of the signatories is the lead partner whom the Employer shall hold liable for the purpose of the tender offer.

F.2.13.5 Seal the original and each copy of the tender offer as separate packages marking the packages as "ORIGINAL" and "COPY". Each package shall state on the outside the Employer's address and identification details stated in the Tender Data, as well as the Tenderer's name and contact address.

F.2.13.6 Where a two-envelope system is required in terms of the Tender Data, place and seal the returnable documents listed in the Tender Data in an envelope marked "Financial Proposal" and place the remaining returnable documents in an envelope marked "Technical Proposal". Each envelope shall state on the outside the Employer's address and identification details stated in the Tender Data, as well as the Tenderer's name and contact address.

F.2.13.7 Seal the original tender offer and copy packages together in an outer package that states on the outside only the Employer's address and identification details as stated in the Tender Data.

F.2.13.8 Accept that the Employer shall not assume any responsibility for the misplacement or premature opening of the tender offer if the outer package is not sealed and marked as stated.

F.2.14 Information and data to be completed in all respects

Accept that tender offers, which do not provide all the data or information requested completely and in the form required, may be regarded by the Employer as non-responsive.

F.2.15 Closing date and time

F.2.15.1 Ensure that the Employer receives the tender offer at the address specified in the Tender Data not later than the closing date and time stated in the Tender Data. Proof of posting shall not be accepted as proof of delivery. The Employer shall not accept tender offers submitted by telegraph, telex, facsimile or e-mail, unless stated otherwise in the Tender Data.

F.2.15.2 Accept that, if the Employer extends the closing date stated in the Tender Data for any reason, the requirements of these conditions of tender apply equally to the extended deadline.

F.2.16 Tender offer validity

F.2.16.1 Hold the tender offer(s) valid for acceptance by the Employer at any time during the validity period stated in the Tender Data after the closing date stated in the Tender Data.

F.2.16.2 If requested by the Employer, consider extending the validity period stated in the Tender Data for an agreed additional period.

F.2.17 Clarification of tender offer after submission

Provide clarification of a tender offer in response to a request to do so from the Employer during the evaluation of tender offers.

This may include providing a breakdown of rates or prices and correction of arithmetical errors by the adjustment of certain rates or item prices (or both). **No change in the total of the prices or substance of the tender offer is sought, offered, or permitted.** The total of the prices stated by the Tenderer shall be binding upon the Tenderer.

F.2.18 Provide other material

F.2.18.1 Provide, on request by the Employer, any other material that has a bearing on the tender offer, the Tenderer's commercial position (including notarized joint venture agreements), preferencing arrangements, or samples of materials, considered necessary by the Employer for the purpose of a full and fair risk assessment.

Should the Tenderer not provide the material, or a satisfactory reason as to why it cannot be provided, by the time for submission stated in the Employer's request, the Employer may regard the tender offer as non-responsive.

F.2.18.2 Dispose of samples of materials provided for evaluation by the Employer, where required.

F.2.19 Inspections, tests and analysis

Provide access during working hours to premises for inspections, tests and analysis as provided for in the Tender Data.

F.2.20 Submit securities, bonds, policies, etc.

If requested, submit for the Employer's acceptance before formation of the contract, all securities, bonds, guarantees, policies and certificates of insurance required in terms of the Conditions of Contract identified in the Contract Data.

F.2.21 Check final draft

Check the final draft of the contract provided by the Employer within the time available for the Employer to issue the contract.

F.2.22 Return of other tender documents

If so instructed by the Employer, return all retained tender documents within 28 days after the expiry of the validity period stated in the Tender Data.

F.2.23 Certificates

Include in the tender submission or provide the Employer with any certificates as stated in the Tender Data.

F.3 THE EMPLOYER'S UNDERTAKINGS

F.3.1 Respond to clarification

Respond to a request for clarification received up to five working days prior to the tender closing time stated in the Tender Data and notify all Tenderers who drew procurement documents.

F.3.2 Issue addenda

If necessary, issue addenda that may amend or amplify the tender documents to each Tenderer during the period from the date of the Tender Notice until seven days before the tender closing date stated in the Tender Data.

If, as a result a Tenderer applies for an extension to the closing date stated in the Tender Data, the Employer may grant such extension and, will then notify it to all Tenderers who drew documents.

F.3.3 Return late tender offers

Return tender offers received after the closing date or time stated in the Tender Data, unopened, (unless it is necessary to open a tender submission to obtain a forwarding address), to the Tenderer concerned.

F.3.4 Opening of tender submissions

F.3.4.1 Unless the two-envelope system is to be followed, open valid tender submissions in the presence of Tenderers' agents who choose to attend at the time and place stated in the Tender Data. Tender submissions for which acceptable reasons for withdrawal have been submitted will not be opened.

F.3.4.2 Announce at the opening held immediately after the opening of tender submissions, at a venue indicated in the Tender Data, the name of each Tenderer whose tender offer is opened, the total of his prices, preferences claimed and time for completion, if any, for the main tender offer only.

F.3.4.3 Make available the record outlined in F.3.4.2 to all interested persons upon request.

F.3.5 Two-envelope system

F.3.5.1 Where stated in the Tender Data that a two-envelope system is to be followed, open only the Technical Proposal of valid tenders in the presence of Tenderers' agents who choose to attend at the time and place stated in the Tender Data and announce the name of each Tenderer whose Technical Proposal is opened.

F.3.5.2 Evaluate the quality of the Technical Proposals offered by Tenderers, then advise Tenderers, who remain in contention for the award of the contract, of the time and place when the Financial Proposals will be opened. Open only the Financial Proposals of Tenderers, who score in the quality evaluation above the minimum number of points for quality stated in the Tender Data, and announce the score obtained for the Technical Proposals and the total price and any preferences claimed. Return unopened Financial Proposals to Tenderers who's Technical Proposals failed to achieve the minimum number of points for quality.

F.3.6 Non-disclosure

Not disclose to Tenderers, or to any other person not officially concerned with such processes, information relating to the evaluation and comparison of tender offers, the final evaluation price and recommendations for the award of a contract, until after the award of the contract to the successful Tenderer.

F.3.7 Grounds for rejection and disqualification

Determine whether there has been any effort by a Tenderer to influence the processing of tender offers and instantly disqualify a Tenderer (and his tender offer) if it is established that he engaged in corrupt or fraudulent practices.

F.3.8 Test for responsiveness

F.3.8.1 Determine, on opening and before detailed evaluation, whether each tender offer properly received:

- a) meets the requirements of these Conditions of Tender,
- b) has been properly and fully completed and signed, and
- c) is responsive to the other requirements of the tender documents.

F.3.8.2 A responsive tender is one that conforms to all the terms, conditions, and specifications of the tender documents without material deviation or qualification. A material deviation or qualification is one which, in the Employer's opinion, would:

- a) Detrimentally affect the scope, quality, or performance of the works, services or supply identified in the Scope of Work,
- b) Change the Employer's or the Tenderer's risks and responsibilities under the contract, or
- c) Affect the competitive position of other Tenderers presenting responsive tenders, if it were to be rectified.

F.3.8.3 Reject a non-responsive tender offer, and not allow it to be subsequently made responsive by correction or withdrawal of the non-conforming deviation or reservation.

F.3.9 Arithmetical errors

F.3.9.1 Check responsive tender offers for arithmetical errors, correcting them in the following manner:

- a) Where there is a discrepancy between the amounts in figures and in words, the amount in words shall govern.
- b) If a Bill of Quantities (or Schedule of Quantities or Schedule of Rates) applies 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.
- c) 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 will be corrected.
- d) **Where there is an error in the total of the prices either as a result of other corrections required by this checking process or in the Tenderer's addition of prices, the total of the prices shall govern and the Tenderer will be asked to revise selected item prices (and their rates if a Bill of Quantities applies) to achieve the tendered total of the prices.**

F.3.9.2 Consider the rejection of a tender offer if the Tenderer does not correct or accept the correction of his arithmetical errors in the manner described above.

F.3.10 Clarification of a tender offer

Obtain clarification from a Tenderer on any matter that could give rise to ambiguity in a contract arising from the tender offer.

F.3.11 Evaluation of tender offers**F.3.11.1 General**

Appoint an evaluation panel of not less than three persons. Reduce each responsive tender offer to a comparative offer and evaluate it using the tender evaluation method that is indicated in the Tender Data and described below:

Method 1: Financial offer (N/A)	1) Rank tender offers from the most favourable to the least favourable comparative offer. 2) Recommend highest ranked Tenderer for the award of the contract, unless there are compelling and justifiable reasons not to do so.
Method 2: Financial offer and preferences (N/A)	1) Score tender evaluation points for financial offer. 2) Confirm that Tenderers are eligible for the preferences claimed and if so, score tender evaluation points for preferencing. 3) Calculate total tender evaluation points. 4) Rank tender offers from the highest number of tender evaluation points to the lowest. 5) Recommend Tenderer with the highest number of tender evaluation points for the award of the contract, unless there are compelling and justifiable reasons not to do so.
Method 3: Financial offer and quality (N/A)	1) Score quality, rejecting all tender offers that fail to score the minimum number of points for quality stated in the Tender Data. 2) Score tender evaluation points for financial offer. 3) Calculate total tender evaluation points. 4) Rank tender offers from the highest number of tender evaluation points to the lowest. 5) Recommend Tenderer with the highest number of tender evaluation points for the award of the contract, unless there are compelling and justifiable reasons not to do so.

Method 4: Financial offer, quality and preferences	1) Score quality, rejecting all tender offers that fail to score the minimum number of points for quality stated in the Tender Data. 2) Score tender evaluation points for financial offer. 3) Confirm that Tenderers are eligible for the preferences claimed, and if so, score tender evaluation points for preferencing. 4) Calculate total tender evaluation points. 5) Rank tender offers from the highest number of tender evaluation points to the lowest. 6) Recommend Tenderer with the highest number of tender evaluation points for the award of the contract, unless there are compelling and justifiable reasons not to do so.
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Score financial offers, preferences and quality, as relevant, to two decimal places.

F.3.11.2 Evaluation Criteria

The Bids will be evaluated on a three-stage, process as follows:

- ✓ Phase 1: Pre-qualification criteria for preferential procurement
- ✓ Phase 2: functionality - 45 points
- ✓ Phase 3: 90/10 preferences point system (Price and Specific goals)

F3.11.2.1 Phase 1: Mandatory requirements

Attendance of briefing session

- Briefing session will be held as per the details below and in addition the purpose is to give contractors clear requirements of the bid. Furthermore, it must be noted that, bidders who will not attend the briefing session as requested will be disqualified.
- Completed and signed attendance register will be used to verify attendance of each bidder.

Date: **06th October 2023**

Venue: **10th AVENUE INDUSTRIA, KROONSTAD 9499**

Time: **11:00am**

Technical enquiries: Mr/s. BVJ TSHABALALA(063 591 3030)/EM PHALATSE(082 059 9763)

Email address: bonganiv66@gmail.com/evodia.phalatse@gmail.com

SCM enquiries: Mr. T. Makhetha @ (051) 409 8891 / Ms. W. Makutoane @ 051 409 8899

Email address: MakhethaT@freetrans.gov.za, MakutoaneW@freetrans.gov.za;

- A valid unique security Personal Identification number (PIN) issued by the South African Revenue Services (where Consortium / Joint Venture / Sub- Contractors are involved, each party to the association must submit a separate valid unique security personal Identification number).
- Bidders must return all fully completed and duly signed standard bidding documents (SBD), returnable schedules and Contract Data forms. These forms must be completed with a black ink non-erasable and attach all returnable documents.
- Bidders must be registered on the centralised supplier database-CSD print out must be attached or must provide a CSD registration number (MAAA.....)
- Bidders must attach a valid CIDB grading 9CE.

In the case of a Joint Venture/ Consortium (any form of partnership) the Bidder must attach the following:

- A joint venture agreement duly signed by both parties, and*
- Certificate of Authority for Signature (Power of Attorney).*
- The combined BBBEE certificate issued in the name of the JV must be attached;*
- The CIDB grading calculated in the name of the JV must also be attached.*

PHASE 2 – FUNCTIONALITY

Functionality Assessment is based on the grid below:

Criterion	Description of criteria	Scoring	Points	Total Points Allocation
EXPERIENCE	Bidders must submit Copies of Appointment Letters and completion certificates for similar nature of work from 1 January 2016, with traceable references to be attached as proof. Reference/ Recommendation letters will only be considered valid if they meet the following criteria: ✓ If on an official client letterhead, ✓ If it refers to provision of	5 Projects of similar type	10	10
		3-4 Projects of similar type	7	
		1-2 Projects of similar type	3	
		0 Projects of similar type	0	

	similar goods or services provided. ✓ If not older than 3 years, If contains contact details, signed, and dated by authorised personnel. In the case where completion certificates are signed by Consultants- the appointment letter of such consultant(s) by roads urgency and any provincial, National, Municipality must be attached.			
CAPACITY NB: Years of experience on the CV must be indicated by correct dates (DD/MM/YYYY). Example: 01/07/2016 to 31/07/2021 (5 Years)	Contracts Manager: Years of experience with aB.Tech or B.EngDegree qualification in Civil Engineering and registered with a professional body e.g. ECSA, SACPCMP... CV's and certified copies (SAPS) of qualifications must be attached of key staff for points to be allocated. Failure to attach will result in no points being allocated. NB: Attach employment contract of the member or form of contract agreement with the member in the event of the project acceptance (signed by both parties). Please note submitted CVs will be accepted as project team members for the project duration. Department reserves the right to cancel the contract with immediate effect; if the submitted CVs personnel is not the team executing the project!!	More than 10 years in roads construction only, experience & qualifications on similar works	8	8
		7 to less than 10 years roads experience and qualification on similar works	5	
		3 to less than 7 years in roads construction only, experience & qualifications on similar works	2	
	Site Agent: Years of experience and Diploma qualification in Civil Engineering.CV's and certified copies (SAPS) of	5 or more years of experience in roads construction	7	7

	qualifications must be attached of key staff for points to be allocated. Failure to attach will result in no points being allocated. NB: Attach employment contract of the member or form of contract agreement with the member in the event of the project acceptance (signed by both parties. Please note submitted CVs will be accepted as project team members for the duration. Department reserves the right to cancel the contract with immediate effect; if the submitted CVs personnel is not the team executing the project!!	only, qualifications on similar works		
		2 to less than 5 years of experience in road construction & similar qualifications.	4	
		Any years of experience in similar field, with no qualification	2	
PLANT/ EQUIPMENT	Ownership of a plant its critical and Bidders must attach proof (e-natis certificate of ownership in the name of the tenderer or JV partner where applicable) thereof / In case of rental a lease agreement must be attached along with e-natis certificate of ownership of the leaser. ✓ Ownership (1 points per machine – recycling and chip spreader will count two points) ✓ Rental (0,5 points per machine - recycling and chip spreader will count two points) ✓ In case of holding, company and its subsidiaries a memorandum of agreement must be attached for utilization of plant equipment.	2 x Grader	2	10
		2 x Tipper Trucks	2	
		2 x Excavator	2	
		1 x recycling machine	2	
		1 x Chip spreader	2	

	OUTSIDE THE FREE STATE BORDERS 5 POINTS			
	Ownership of a plant its critical and Bidders must attach proof (e-natis certificate of ownership in the name of the tenderer or JV partner where applicable) thereof / In case of rental a lease agreement must be attached along with e-natis certificate of ownership of the leaser. ✓ Ownership (1 points per machine – recycling and chip spreader will count two points) ✓ Rental (0,5 points per machine - recycling and chip spreader will count two points) ✓ In case of holding, company and its subsidiaries a memorandum of agreement must be attached for utilization of plant equipment. ✓	2 x Grader	1	5
		2 x Tipper Trucks	1	
		2 x Excavator	1	
		1 x recycling machine	1	
		1 x Chip spreader	1	
LOCALITY	Locally based: Municipal services (water, sanitation, rates, and electricity) clearance certificate or Lease Agreement with a Current Bill of Account not owing more than Ninety (90) days.	Fezile Dabi district	5	5
Free State based offices		3		
Outside Free State Province based offices		1		
MAXIMUM POSSIBLE SCORE				45

NB: A bidder who fails to obtain the minimum qualifying score of 27 points for functionality as indicated in the GRID above will not be accepted. All bidders that obtained the minimum qualifying score for functionality will further be evaluated in terms of price and specific goals.

F3.11.2.3 Phase 3: Price and Specific goals**Assessment for phase 3 will be evaluated on 90/10 preferential point system:**

Price : 90

Specific goals

: 10

Price: 90: The lowest acceptable Bidder qualifies for maximum points of 90 for price. These points will be for the Total Bid Offer. The points for price will be calculated according to clause 6, item 1 of the PPPFA 2000 as follows:

$$P = 90 \times \left(1 - \frac{(Pt - P_{min})}{P_{min}}\right)$$

Where

Ps = Points scored for price of tender under consideration.

Pt = Price of tender under consideration; and

Pmin = Price of lowest acceptable tender.

Specific Goals: 10: Points will be awarded to bidders for attaining the B –BBEE status level of contributor in accordance with the table below:

B-BBEE Status Level of Contributor	Number of points
1	10
2	9
3	8
4	5
5	4
6	3
7	2
8	1
Non-complaint Contributor	0

- ✓ A tenderer must submit proof of its B-BBEE status level of contributor to qualify for BBEE points, failing to submit proof of B-BBEE status level of contributor cannot be regarded as a disqualifying factor but is a non-compliant contributor to B-BBEE and, may only score points out of 90 for price; and scores 0 points out of 10 for B-BBEE.
- ✓ The points scored by a tenderer for Specific goals in terms of this regulation must be added to the points scored for price, the points scored must be rounded off to the nearest two decimal places and the contract must be awarded to the tenderer scoring the highest points
- ✓ Bidder must submit BBEE Verification Certificate obtained from an entity registered with SANAS or ABVA preferable Level One (1) Contributor and above/ Affidavit obtained from DTI.

THE FOLLOWING CONDITIONS FORMS PART OF SPECIAL CONDITIONS OF BID / CONDITIONS OF ACCEPTANCE.

- ✓ Bids must be valid for **90 days**
- ✓ The service providers shall bear the cost associated with the preparation and submission of the proposals.
- ✓ The Department of Community Safety, Roads and Transport selection of qualifying tenders will be as per Department's Supply Chain Management policy and will be final.
- ✓ The Department is not bound to accept any proposal and reserves the right to annul the selection process at any time prior to contract award, without incurring any liability to the bidders.
- ✓ The Department reserves the right to appoint more than one service provider.
- ✓ Bidders who falsify any information will be disqualified-If it's discovered during the contract period, the Department reserves the right to terminate the contract immediately
- ✓ *Bidders must attach the latest annual financial statements which must be duly signed by an accredited accounting firm.*
- ✓ Full computation of the 30% subcontracting amount-failure of the contractor to commit sub-contracting portion of the work, will lead to rejection of the bid.

The following information must be attached to the bid document:

- ✓ Business profile.
- ✓ Certified copy of Companies and Intellectual Property Commission (CIPC).
- ✓ Certified copies of identity documents of all active members/shareholders of the company NOT older than 3 months, with clear dates of certification by SAPS.

NB: No late/faxed/e-mailed/posted submissions will be accepted or considered.

F.3.12 Insurance provided by the Employer

If requested by the proposed successful Tenderer, submit for the Tenderer's information the policies and / or certificates of insurance which the Conditions of Contract identified in the Contract Data, require the Employer to provide.

F.3.13 Acceptance of tender offer

- F.3.13.1 Accept tender offer only if the Tenderer satisfies the legal requirements stated in the Tender Data.
-

F.3.13.2 Notify the successful Tenderer of the Employer's acceptance of his tender offer by completing and returning one copy of the Form of Offer and Acceptance before the expiry of the validity period stated in the Tender Data, or agreed additional period. Providing the Form of Offer and Acceptance does not contain any qualifying statements, it will constitute the formation of a contract between the Employer and the successful Tenderer as described in the Form of Offer and Acceptance.

F.3.14 Notice to unsuccessful Tenderers

After the successful Tenderer has acknowledged the Employer's notice of acceptance, notify other Tenderers that their tender offers have not been accepted.

F.3.15 Prepare contract documents

If necessary, revise documents that shall form part of the contract and that were issued by the Employer as part of the tender documents to take account of:

- a) addenda issued during the tender period,
- b) inclusion of some of the returnable documents,
- c) other revisions agreed between the Employer and the successful Tenderer, and
- d) the Schedule of Deviations attached to the Form of Offer and Acceptance, if any.

F.3.16 Issue final contract

Prepare and issue the final draft of contract documents to the successful Tenderer for acceptance as soon as possible after the date of the Employer's signing of the Form of Offer and Acceptance (including the Schedule of Deviations, if any).

Only those documents that the conditions of tender require the Tenderer to submit, after acceptance by the Employer, shall be included.

F.3.17 Complete adjudicator's contract

Unless alternative arrangements have been agreed or otherwise provided for in the contract, arrange for both parties to complete formalities for appointing the selected adjudicator at the same time as the main contract is signed.

F.3.18 Provide copies of the contract

Provide to the successful Tenderer the number of copies stated in the Tender Data of the signed copy of the contract as soon as possible after completion and signing of the Form of Offer and Acceptance.

T1.3 TENDER DATA**T1.3.1 GENERAL**

The Conditions of Tender in Section T1.2 are the Standard Conditions of Tender as contained in Annex F of SANS 294 – *Construction Procurement Processes, Methods and Procedures* which contain references to the Tender Data for details that apply specifically to this tender. The Tender Data in this Section T.1.3 shall be read with the Standard Conditions of Tender in order to expand on the Tenderer's obligations and the Employer's undertakings in administering the tender process in respect of the project under consideration. The Tender Data hereafter shall have precedence in the interpretation of any ambiguity or inconsistency between it and the Standard Conditions of Tender. Each item of Tender Data given below is cross-referenced to the relevant clause in the Standard Conditions of Tender.

T1.3.2 TENDER DATA APPLICABLE TO THIS TENDER**Clause
number****Wording****F1. GENERAL****F.1.2 Tender documents**

The tender documents issued by the Employer comprise of :

a) VOLUME 1 : PROJECT DOCUMENT

This volume is the Project Document for the identified contract number CSR&T/BID16/2023/24 and contains the following sections:

THE TENDER**PART T1: TENDERING PROCEDURES**

- T1.1 TENDER NOTICE AND INVITATION TO TENDER
- T1.2 STANDARD CONDITIONS OF TENDER
- T1.3 TENDER DATA

PART T2: RETURNABLE DOCUMENTS

- T2.1 LIST OF RETURNABLE DOCUMENTS
- T2.2 RETURNABLE SCHEDULES

THE CONTRACT**PART C1: AGREEMENTS AND CONTRACT DATA**

- C1.1 FORM OF OFFER AND ACCEPTANCE
- C1.2 CONTRACT DATA

PART C2: PRICING DATA

- C2.1 PRICING INSTRUCTIONS
- C2.2 BILL OF QUANTITIES

BID No: CSR&T/BID16/2023/24

PART C3: SCOPE OF WORK

- C3.1 STANDARD SPECIFICATIONS
- C3.2 PROJECT SPECIFICATIONS
- C3.3 PARTICULAR SPECIFICATIONS

PART C4: SITE INFORMATION

c) VOLUME 2: BOOK OF DRAWINGS

There is no Volume 2 - Book of Drawings for CSR&T/BID16/2023/24.

The following documents also form part of the tender and contract, but must be purchased by each of the Tenderers themselves:

- d) VOLUME 3: *General Conditions of Contract for construction works, 2nd edition 2015*, issued by the South African Institute of Civil Engineering.**
- e) VOLUME 4: *The COTO Standard Specifications for Road and Bridge Works for State Road Authorities October 2020*, issued by the Committee of Land Transport Officials.**
- f) *The Occupational Health and Safety Act No 85 and Amendment Act No 181 of 1993, and the Construction Regulations GNR.929 of 25 June 2014 (Government Gazette No 25207 of 18 July 2014, Notice No R1010)*, together with all COVID related regulations.**
This document is obtainable separately, and Tenderers shall obtain their own copies.
- g)** In addition Tenderers are advised, in their own interest, to obtain their own copies of the following acts, regulations and standards referred to in this document as they are essential for the Tenderer to get acquainted with the basics of construction management, the implementation of preferential construction procurement policies and participation of targeted enterprises and labour.
 - (i) The Construction Industry Development Board Act No 38 of 2000 and the Regulations in terms of the CIDB Act 38/2000, Government Notice No 692 of 9 June 2004, and amendments
 - (ii) SANS 10396:2003 Implementing Preferential Construction Procurement Policies using Targeted Procurement Procedures
 - (iii) SANS 1914:2003 Targeted Construction Procurement, Parts 1 to 6, dealing with Participation of Targeted Enterprises, Joint Ventures, Targeted Labour etc.

The Project Document and the drawings shall be obtained from the Employer or his authorized representative at the physical address stated in the Tender Notice, upon payment of the deposit stated in the Tender Notice.
 - (iv) Asphalt Academy May 2009 publication "TG2 Second Edition, Technical guideline: Bitumen Stabilised Materials".

F.1.4 Communication and Employer's Agent

The Employer's Agent is : Mr V Ntaka

Address : Medfontein Building 303, St. Andrew Street, BLOEMFONTEIN.
Tel no : 082 059 9720
Fax no : 051 409 8683
e-mail : ntakav.freetrans@gmail.com/ntakav@freetrans.gov.za

BID No: CSR&T/BID16/2023/24

The Engineer per GCC 2015 is EM Phalatse

Address : Medfontein Building 303, St. Andrew Street, BLOEMFONTEIN.
 Tel no : 082 059 9763
 Fax no : 051 409 8683
 e-mail : evodia.phalatse@gmail.com

F2.1 Eligibility

F2.1.1 Only those Tenderers who have in their employ management and supervisory staff satisfying the requirements of the Scope of Work for labour intensive competencies for supervisory and management staff are eligible to submit tenders. NQF Level 6 will be a minimum requirement for supervisors.

F2.1.2 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 submit tenders:

- a) Contractors who have a contractor grading designation equal to or higher than a contractor grading designation determined in accordance with the sum tendered for **9CE** class of construction work;
- 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
- c) Tenderers need to ensure that they are registered in the grading in which they tender if their tender price differs from the grading as specified

F2.1.3 Joint Ventures are eligible to submit tenders provided that :

- a) every member of the joint venture is registered with the CIDB ;
- b) the lead partner has a contractor grading designation in the **9CE** class of construction work ; or Higher
- c) the combined contractor grading designation calculated in accordance with the Construction Industry Development Board Regulations is equal to or higher than a contractor grading designation determined in accordance with the sum tendered for a **9CE** class of construction work.

F2.7 Site visit and clarification meeting

The arrangements for a compulsory clarification meeting are as stated in the Tender Notice and Invitation to Tender.

NOTE : NON-ATTENDANCE OF THIS MEETING WILL DISQUALIFY THE TENDER

- (a) The Attendance List will be accepted as the official attendance of the clarification meeting. Signing the Attendance List of this meeting is the responsibility of the Tenderer attending the meeting and site inspection.

It is important for prospective Tenderers to note that the name of the company on the Attendance List will be accepted as the legitimate Tenderer, which was represented by the person who signed the Attendance List.

- (b) Addenda of additional or changed contractual information will only be forwarded to Tenderers who attended the official site visit and clarification meeting.
-

F2.12. Alternative tender offers

Should a Tenderer wishes to submit an alternative tender offer, the only criteria permitted for such alternative tender offer is that it demonstrably satisfies the Employer's standards and requirements, the details of which may be obtained from the Employer's Agent.

Calculations, drawings and all other pertinent technical information and characteristics as well as modified or proposed Pricing Data must be submitted with the alternative tender offer to enable the Employer to evaluate the efficacy of the alternative and its principal elements, to take a view on the degree to which the alternative complies with the Employer's standards and requirements and to evaluate the acceptability of the pricing proposals. Calculations must be set out in a clear and logical sequence and must clearly reflect all design assumptions. Pricing Data must reflect all assumptions in the development of the pricing proposal.

Acceptance of an alternative tender offer will mean acceptance in principle of the offer. It will be an obligation of the contract for the Tenderer, in the event that the alternative is accepted, to accept full responsibility and liability that the alternative offer complies in all respects with the Employer's standards and requirements.

The modified Pricing Data must include an amount equal to 0% of the amount tendered for the alternative offer to cover the Employer's costs of confirming the acceptability of the detailed design before it is constructed.

F2.13 Submitting a tender offer

F2.13.5 Tender offers shall be submitted as an original only.

F2.13.7 The Employer's address:

The Head
Department of Community, Roads and Transport
POBox 690
Room 226
Medfontein Building
St Andrew Street
BLOEMFONTEIN
9300

Location of tender box : As stated

Identification details : **CSR&T/BID16/2023/24**

Description of project : **SPECIAL MAINTENANCE OF PRIMARY ROAD P30/1 KOPPIES TO SASOLBURG FOR A PERIOD 30 MONTHS**

F2.15 Closing time

The closing date for submission of tender offers is as stated in the Tender Notice and Invitation to Tender.

F2.16 Tender offer validity

The tender offer validity period is **90 calendar** days from the closing date for submission of tenders.

F2.18 Provide other material

The Tenderer shall, when requested by the Employer to do so, submit the names of all management and supervisory staff that will be employed to supervise the labour-intensive portion of the works with satisfactory evidence that such staff members satisfy the eligibility requirements.

F2.23 Certificates

The following certificates need to be included in the Tender:

- a) A valid Tax Clearance Certificate for the Tenderer or for each of the JV partners if tendered in a Joint Venture, issued by the South African Revenue Services;
- b) The Tenderer's CIDB Registration Certificate or the Joint Venture's members' CIDB Registration Certificates with an indication of the senior partner.

F3.4 Opening of tender submissions

Tender submissions will be opened at 45 Charlotte Maxeke Street, Room 219, Perm Building.

F3.5 Two-envelope system

The two-envelope system will not be followed for this contract.

F3.11 Evaluation of tender offers

F3.11.1 Due to the nature of the tendering process, with negotiated rates, the tenders will be evaluated and the rates balanced to suit the particular Contractor's circumstance.

F3.11.2 Scoring quality

No points will be allocated to scoring of quality.

F3.13 Acceptance of tender offer**F3.13.1 Tender offers will only be accepted if:**

- a) the tender offer is signed by a person authorized to sign on behalf of the Tenderer;
- b) the Tenderer submitted a valid unique security personal identification number (pin) issued by the South African Revenue Services;
- c) Tenderer's declaration of compliance with the Occupational Health and Safety Act No 85 of 1993 and the Construction Regulations 2014 is included with his tender submission;
- d) a Tenderer who submitted a tender as a Joint Venture has included an acceptable Joint Venture Agreement with his tender;
- e) the Tenderer or a competent authorized representative of the contractor who submitted the tender has attended the compulsory clarification meeting or site inspection;
- f) the Tenderer included with its tender the contractor's CIDB Registration Certificate (or certified copy thereof) as proof that it is registered in accordance with the Construction Industry Development Board Act No. 38 of 2000 and the Regulations 2003 promulgated in terms of the Act ;
- g) the Tenderer or any of its directors 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; and

-
- h) the Tenderer has not:
 - 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
 - i) has completed the Compulsory Enterprise Questionnaire 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.

F3.18 Provide copies of the contract

The Employer will provide the successful Tenderer, now the Contractor, with one copy of the complete, signed contract document.

SPECIAL MAINTENANCE OF PRIMARY ROAD P30/1 KOPPIES TO SASOLBURG

PART T2 : RETURNABLE DOCUMENTS

CONTENTS

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T2.2.2	PREFERENTIAL PROCUREMENT SCHEDULES AND AFFIDAVIT T2-25	
T2.2.3	FORMS TO BE SUBMITTED BY SUCCESSFUL TENDERER T2-36	

T2.1 LIST OF RETURNABLE DOCUMENTS

The Tender Document must be submitted as a whole. All forms must be properly completed as required, and the document shall not be taken apart or altered in any way whatsoever.

All the certificates and forms to be provided with the tender are listed in the Tender Data under F2.23: Certificates, and under the returnable schedules and forms in T2.2 hereafter.

The list of returnable documents comprises the following :

1. All the certificates listed in the Tender Data under F2.23 : Certificates ;
2. All the returnable schedules and forms listed in T2.2.1 : Returnable Schedules Required for Tender Evaluation Purposes ;
3. All the returnable documents listed in T2.2.2 : Preferential Procurement Schedules and Affidavits that will be incorporated into the Contract ;
4. All the agreements and forms listed in T2.2.3: Forms to be completed by the successful Tenderer ;
5. All the forms and agreements in the Contract Data in C1.2, where some of the forms (agreements) need to be completed only by successful Tenderer ;
6. Pricing Data in C2.2 : Bill of Quantities.

T2.2 RETURNABLE SCHEDULES

T2.2.1 RETURNABLE SCHEDULES REQUIRED FOR TENDER EVALUATION PURPOSES

SECTION	DESCRIPTION	PAGE
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T2.2.2 PREFERENTIAL PROCUREMENT SCHEDULES AND AFFIDAVITS THAT WILL BE INCORPORATED INTO THE CONTRACT T2-25

T2.2.3 FORMS TO BE SUBMITTED BY THE SUCCESSFUL TENDERER T2-36

NOTE : The Tenderer is required to complete each and every schedule and form listed above to the best of his ability, as the evaluation of tenders and the eventual contract will be based on the information provided by the Tenderer.
 Failure of a Tenderer to complete the schedules and forms to the satisfaction of the Employer will inevitably prejudice the tender and may lead to rejection on the grounds that the tender is not responsive.

The same applies to the Preferential Procurement Schedule in T2.2.2.

SCHEDULE A : RECORD OF ADDENDA TO TENDER DOCUMENTS

I / We confirm that the following communication/s, amending the tender documents, received from the Employer or his representative before the closing date for submission of this tender offer, have been taken into account in this tender offer :

Addendum no.	Date	Title or details
1		
2		
3		
4		
5		
6		
7		
8		

SIGNATURE :

SCHEDULE B : CERTIFICATE OF AUTHORITY

Indicate the status of the Tenderer by ticking the appropriate box hereunder. The Tenderer must complete the certificate set out below for the relevant category.

(i) COMPANY	(ii) CLOSE CORPORATION	(iii) PARTNERSHIP	(iv) JOINT VENTURE	(v) SOLE PROPRIETOR

(i) CERTIFICATE FOR COMPANY

I,, Managing Director of the Board of Directors of, hereby confirm that by resolution of the Board (copy attached) taken on 20....., Mr/Ms, acting in the capacity of, was authorized to sign all documents in connection with this tender and any contract resulting from it, on behalf of the company.

Managing Director :

(ii) CERTIFICATE FOR CLOSE CORPORATION

We, the undersigned, being the key members in the business trading as hereby authorise Mr/Ms, acting in the capacity of, to sign all documents in connection with this tender and any contract resulting from it, on our behalf.

NAME	ADDRESS	SIGNATURE	DATE

Note : *This certificate is to be completed and signed by all of the key members upon whom rests the direction of the affairs of the Close Corporation as a whole.*

(iii) CERTIFICATE FOR PARTNERSHIP

We, the undersigned, being the key partners in the business trading as, hereby authorize Mr/Ms acting in the capacity of, to sign all documents in connection with this tender and any contract resulting from it, on our behalf.

NAME	ADDRESS	SIGNATURE	DATE

SPECIAL MAINTENANCE OF PRIMARY ROAD P30/1 KOPPIES TO SASOLBURG FOR A PERIOD OF 30 MONTHS
BID No: CSR&T/BID16/2023/24

NAME	ADDRESS	SIGNATURE	DATE

Note : *This certificate is to be completed and signed by all of the key partners upon whom rests the direction of the affairs of the Partnership as a whole.*

(iv) CERTIFICATE FOR JOINT VENTURE

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

This authorization is evidenced by the attached power of attorney signed by legally authorized signatories of all the partners to the Joint Venture.

NAME OF FIRM	ADDRESS	AUTHORIZING SIGNATURE, NAME AND CAPACITY
Lead partner		

Note : *This certificate is to be completed and signed by all of the key partners upon whom rests the direction of the affairs of the Partnership as a whole.*

(v) CERTIFICATE FOR SOLE PROPRIETOR

I,, hereby confirm that I am the sole owner of the business trading as

Signature of sole owner :

REGISTRATION CERTIFICATE / AGREEMENT / ID DOCUMENT

Important note to Tenderer :

Registration Certificates for Companies, Close Corporations and Partnerships, or Agreements and Powers of Attorney for Joint Ventures, or ID documents for Sole Proprietors, all as referred to in the foregoing forms and in T2.1, must be attached here.

SCHEDULE C : ` COMPULSORY ENTERPRISE QUESTIONNAIRE

The following particulars must be furnished. In the case of a Joint Venture, separate enterprise questionnaires in respect of each partner must be completed and submitted.

Section 1 : Name of enterprise :

Section 2 : VAT registration number :

Section 3 : CIDB registration number :

Section 4 : Particulars of sole proprietors and partners in partnerships :

Name*	Identity number*	Personal income tax number*

* Complete only if sole proprietor or partnership and attach separate page if more than 3 partners

Section 5 : Particulars of companies and close corporations

Company registration number

Close corporation number

Tax reference number

Section 6 : Record of service of the state

Indicate by marking the relevant boxes with a cross, if any sole proprietor, partner in a partnership or director, manager, principal shareholder or stakeholder in a company or close corporation is currently or has been within the last 12 months, in the service of any of the following:

- | | |
|--|---|
| ☐ a member of any municipal council | ☐ 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 any provincial legislature | |
| ☐ a member of the National Assembly or the National Council of Province | ☐ a member of an accounting authority of any national or provincial public entity |
| ☐ a member of the board of directors of any municipal entity | ☐ an employee of Parliament or a provincial legislature |
| ☐ an official of any municipality or municipal entity | |

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

Name of sole proprietor, partner, director, manager, principal shareholder or stakeholder	Name of institution, public office, board or organ of state and position held	Status of service (tick appropriate column)	
		Current	Within last 12 months

Note : Insert separate page if necessary

Section 7 : Record of spouses, children and parents in the service of the state

Indicate by marking the relevant boxes with a cross, if any spouse, child or parent of a sole proprietor, partner in a partnership or director, manager, principal shareholder or stakeholder in a company or close corporation 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 | ☐ 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 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 | ☐ a member of an accounting authority of any national or provincial public entity |
| ☐ an official of any municipality or municipal entity | ☐ an employee of Parliament or a provincial legislature |

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

Name of spouse, child or parent	Name of institution, public office, board or organ of state and position held	Status of service (tick appropriate column)	
		current	Within last 12 months

Note : Insert separate page if necessary

The undersigned, who warrants that he/she is duly authorized to do so on behalf of the enterprise :

- i) confirms that neither the name of the enterprise or the name of any partner, manager, director or other person, who wholly or partly exercises, or may exercise, control over the enterprise appears on the Register of Tender Defaulters established in terms of the Prevention and Combating of Corrupt Activities Act of 2004;
- ii) confirms that no partner, member, director or other person, who wholly or partly exercises, or may exercise, control over the enterprise appears, has within the last five years been convicted of fraud or corruption;
- iii) confirms that I / we are not associated, linked or involved with any other tendering entities submitting tender offers and have 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;
- iv) confirms that the contents of this questionnaire are within my personal knowledge and are to the best of my belief both true and correct.

Signed Date

Name Position

Enterprise
name

SCHEDULE D : PLANT AND EQUIPMENT

The following are a list of major items of relevant equipment that I / we presently own and will have available for this contract if my / our tender is accepted.

- (a) **Details of major equipment that is owned by me / us and immediately available for this contract.**

DESCRIPTION (<i>type, size, capacity etc</i>)	QUANTITY	YEAR OF MANUFACTURE

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 accepted**

DESCRIPTION (<i>type, size, capacity etc</i>)	QUANTITY	HOW ACQUIRED	
		HIRE/ BUY	SOURCE

Note : Attach additional pages if more space is required

The Tenderer undertakes to bring onto site without additional cost to the Employer any additional plant not listed but which may be necessary to complete the contract within the specified contract period.

SIGNATURE :

ATTACH THE PLANT AND EQUIPMENT LIST/S HERE

SCHEDULE E : EXPERIENCE OF TENDERER

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

EMPLOYER: CONTACT PERSON AND TELEPHONE NUMBER	CONSULTING ENGINEER: CONTACT PERSON AND TELEPHONE NUMBER	NATURE OF WORK	VALUE OF WORK (inclusive of VAT)	DATE COMPLETED OR EXPECTED TO BE COMPLETED

SIGNATURE :

ATTACH THE LIST HERE IF SEPARATE LIST IS PROVIDED

SCHEDULE G: TENDERERS' KEY PERSONNEL

NAME	POSITION	NQF QUALIFICATION

SIGNATURE :

SPECIAL MAINTENANCE OF PRIMARY ROAD P30/1 KOPPIES TO SASOLBURG FOR A PERIOD OF 30 MONTHS

BID No: CSR&T/BID16/2023/24

**ATTACH COPIES OF NQF CERTIFICATES FOR LABOUR INTENSIVE CONSTRUCTION OF
RELEVANT SUPERVISORS**

SCHEDULE H: PRELIMINARY PROGRAMME

The Tenderer shall detail below or attach a preliminary programme reflecting the proposed sequence and tempo of execution of the various activities comprising the work for this Contract. The programme shall be in accordance with the information supplied in the Contract, requirements of the Project Specifications and with all other aspects of his Tender.

PROGRAMME

ACTIVITY	MONTHS														

[Note: The programme must be based on the completion time as specified in the Contract Data. No other completion time that may be indicated on this programme will be regarded as an alternative offer, unless it is listed in Table (b) of Form I hereafter and supported by a detailed statement to that effect, all as specified in the Tender Data]

SIGNATURE :

ATTACH PRELIMINARY PROGRAM HERE

SCHEDULE I : AMENDMENTS, QUALIFICATIONS AND ALTERNATIVES

The Tenderer should record any amendments and alternatives he may wish to make to the tender documents in this schedule. Alternatively a Tenderer may state such amendments and alternatives in a covering letter to his tender and reference such letter in this schedule.

The Tenderer's attention is drawn to clause F3.3 if the Standard Conditions of Tender referenced in the Tender Data regarding the Employer's handling of material deviations and qualifications.

These amendments and qualifications, if accepted by the Employer, will be incorporated in the Form of Offer and Acceptance, Schedule of Deviations.

(a) AMENDMENTS AND QUALIFICATIONS

PAGE	CLAUSE OR ITEM NO	PROPOSED AMENDMENT AND QUALIFICATIONS

**[Notes: (1) Amendments to the General and Special Conditions of Contract are not acceptable;
(2) The Tenderer must give full details of all the financial implications of the amendments and qualifications in a covering letter attached to his tender.**

(b) ALTERNATIVES

PROPOSED ALTERNATIVE	DESCRIPTION OF ALTERNATIVE

[Notes: (1) Individual alternative items that do not justify an alternative tender, and an alternative offer for time for completion should be listed here.

(2) In the case of a major alternative to any part of the work, a separate Bill of Quantities, programme, etc, and a detailed statement setting out the salient features of the proposed alternatives must accompany the tender.

(3) Alternative tenders involving technical modifications to the design of the works and methods of construction shall be treated separately from the main tender offer.]

SIGNATURE :

SPECIAL MAINTENANCE OF PRIMARY ROAD P30/1 KOPPIES TO SASOLBURG FOR A PERIOD OF 30 MONTHS

BID No: CSR&T/BID16/2023/24

ATTACH ALTERNATIVES HERE

SCHEDULE J: CONTRACTOR'S HEALTH AND SAFETY PLAN AND DECLARATION

In terms of Clause 4(4) of the OHSA 1993 Construction Regulations 2003 (referred to as "the Regulations" hereafter), a Contractor may only be appointed to perform construction work if the Employer is satisfied that the Contractor has the necessary competencies and resources to carry out the work safely in accordance with the Occupational Health and Safety Act No 85 of 1993 and the OHSA 1993 Construction Regulations 2003.

To that effect a person duly authorized by the Tenderer must complete and sign the declaration hereafter in detail.

Declaration by Tenderer

1. I the undersigned hereby declare and confirm that I am fully conversant with the Occupational Health and Safety Act No 85 of 1993 (as amended by the Occupational Health and Safety Amendment Act No 181 of 1993), and the OHSA 1993 Construction Regulations 2003.
2. I hereby declare that my company has the competence and the necessary resources to safely carry out the construction work under this contract in compliance with the Construction Regulations and the Employer's Health and Safety Specifications.
3. I hereby undertake, if my tender is accepted, to provide, before commencement of the works under the contract, a suitable and sufficiently documented Health and Safety Plan in accordance with Regulation 5(1) of the Construction Regulations, which plan shall be subject to approval by the Employer.
4. I confirm that copies of my company's approved Health and Safety Plan, the Employer's Safety Specifications as well as the OHSA 1993 Construction Regulations 2003 will be provided on site and will at all times be available for inspection by the Contractor's personnel, the Employer's personnel, the Engineer, visitors, and officials and inspectors of the Department of Labour.
5. I hereby confirm that adequate provision has been made in my tendered rates and prices in the Bill of Quantities to cover the cost of all resources, actions, training and all health and safety measures envisaged in the OHSA 1993 Construction Regulations 2003, including the cost for specific items that may be scheduled in the Bill of Quantities.
6. I hereby confirm that I will be liable for any penalties that may be applied by the Employer in terms of the said Regulations for failure on my part to comply with the provisions of the Act and the Regulations as set out in Regulation 30 of the Regulations.
7. I agree that my failure to complete and execute this declaration to the satisfaction of the Employer will mean that I am unable to comply with the requirements of the OHSA 1993 Construction Regulations 2003, and accept that my tender will be prejudiced and may be rejected at the discretion of the Employer.
8. I am aware of the fact that, should I be awarded the contract, I must submit the notification required in terms of Regulation 3 of the OHSA 1993 Construction Regulations 2003 before I will be allowed to proceed with any work under the contract.

SIGNATURE :

CONTRACTOR'S SAFETY PLAN

The Tenderer shall attach to this page (or submit it separately) the Contractor's Health and Safety Plan as required in terms of Regulation 5 of the Occupational Health and Safety Act 1993 Construction Regulations 2014, including COVID 19 OHS regulations 2020, and referred to in Form K.

The Contractor's Health and Safety Plan shall cover at least the following aspects as applicable:

1. Safety of subcontractors (Refer Construction Regulations 2003 Clause 5: Principal Contractors and Contractors)
 - Methods to ensure the approval, implementation and maintenance of all health and safety aspects regarding his subcontractors.
2. Monitoring the health and safety on the construction site on a regular basis (Refer Clause 6: Supervision of Construction Work)
 - Details of the Construction Supervisor and his appointed assistants (if any);
 - Details of the Construction Safety Officer, full-time or part-time;
 - Details of the suitability and competency of the Construction Supervisor and Construction Safety Officer regarding health and safety aspects of the construction works.
3. Assessment of risks on the construction site (Refer Clause 7: Risk Assessment)
 - Details of a proper risk assessment on which his health and safety plan is based;
 - Ways in which all construction employees are informed, instructed and trained regarding the work procedures and the related hazards.
4. Risk items (Refer Clauses 8 to 28: Risk items to be addressed)
 - Details of the design, management, responsibilities, worker training, work methods, procedures, maintenance and any other requirements necessary for him and his subcontractor, if applicable, to work safely and in a healthy environment as stipulated in these clauses.

Contractor's OHS Management System checklist

1. OHS Policy and Management

		Yes	No
1.1	Is there a written company health and safety policy?		
1.2	Does the company have an OHS Management System?		
1.3	Is there a company OHS Management Manual or Plan?		
1.4	Are health and safety responsibilities clearly identified for all levels of staff?		

2. Safe Work Practices and Procedures

		Yes	No
2.1	Has the company prepared safe operating procedures or specific safety instructions relevant to its operations?		
2.2	Does the company have any permit to work systems?		
2.3	Is there a documented incident investigation procedure?		
2.4	Are there procedures for maintaining, inspecting and assessing the hazards of plant operated/owned by the company?		
2.5	Are there procedures for storing and handling hazardous substances?		
2.6	Are there procedures for identifying, assessing and controlling risks associated with manual handling?		

3. OHS Training

		Yes	No
3.1	Is health and safety training conducted in the company?		
3.2	Is a record maintained of all training and induction programs undertaken for employees in the company?		

4. Health and Safety Workplace Inspection.

		Yes	No
4.1	Are regular health and safety inspections at worksites undertaken?		
4.2	Are standard workplace inspection checklists used to conduct health and safety inspections?		
4.3	Is there a procedure by which employees can report hazards at workplaces?		

5. Health and Safety Consultation.

		Yes	No
5.1	Is there a workplace health and safety committee?		
5.2	Are employees involved in decision making over OHS matters?		
5.3	Are there employee elected health and safety representatives?		

6. OHS Performance Monitoring.

		Yes	No
6.1	Is there a system for recording and analyzing health and safety performance statistics?		
6.2	Are employees regularly provided with information on company health and safety performance?		
6.3	Has the company ever been convicted of an occupational health and		

	safety offence?			
--	-----------------	--	--	--

7. Does your company's health and safety plan contain the following elements?

		Yes	No
7.1	Description of the contract		
7.2	OHS Structure of work undertaken under this contract		
7.3	Induction and safety training		
7.4	Safe work practices and procedures for specific work undertaken		
7.5	Risk assessments for specific works undertaken		
7.6	Workplace inspection schedule for duration of contract		
7.7	OHS consultative processes to be followed		
7.8	Emergency procedure for this specific contract		
7.9	Incident recording and investigation on procedures		
7.10	Health and safety performance monitoring arrangements to be implemented during contract		

SCHEDULE K : CONTRACTOR'S CERTIFICATE OF REGISTRATION WITH CIDB

[The Tenderer shall attach hereto the Contractor's Certificate of Registration with CIDB. Failure to submit the certificate with the tender document will lead to the conclusion that the Tenderer is not registered with the CIDB and therefore not eligible to tender].

SCHEDULE M :

SBD 6.1

SBD 6.1- PREFERENCE POINTS CLAIM FORM IN TERMS OF THE PREFERENTIAL PROCUREMENT REGULATIONS 2022

This preference form must form part of all tenders invited. It contains general information and serves as a claim form for preference points for specific goals.

NB: BEFORE COMPLETING THIS FORM, TENDERERS MUST STUDY THE GENERAL CONDITIONS, DEFINITIONS AND DIRECTIVES APPLICABLE IN RESPECT OF THE TENDER AND PREFERENTIAL PROCUREMENT REGULATIONS, 2022

1. GENERAL CONDITIONS

1.1 The following preference point systems are applicable to invitations to tender:

- The 80/20 system for requirements with a Rand value equal to or below R50 000 000 (all applicable taxes included).

1.2 **To be completed by the organ of state** *(delete whichever is not applicable for this tender).*

- (a) The applicable preference point system for this tender is the **Specific Goals**.

1.3 Points for this tender (even in the case of a tender for income-generating contracts) shall be awarded for:

1.4

- (a) Specific Goals.

1.5 **To be completed by the organ of state:**

The maximum points for this tender are allocated as follows:

	POINTS
SPECIFIC GOALS	
Total points for Price and Specific Goals	

1.6 Failure on the part of a tenderer to submit proof or documentation required in terms of this tender to claim points for specific goals with the tender, will be interpreted to mean that preference points for specific goals are not claimed.

1.7 The organ of state reserves the right to require of a tenderer, either before a tender is adjudicated or at any time subsequently, to substantiate any claim in regard to preferences, in any manner required by the organ of state.

2. DEFINITIONS

- (a) **“tender”** means a written offer in the form determined by an organ of state in response to an invitation to provide goods or services through price quotations, competitive tendering process or any other method envisaged in legislation;

-
- (b) **“price”** means an amount of money tendered for goods or services, and includes all applicable taxes less all unconditional discounts;
- (c) **“rand value”** means the total estimated value of a contract in Rand, calculated at the time of bid invitation, and includes all applicable taxes;
- (d) **“tender for income-generating contracts”** means a written offer in the form determined by an organ of state in response to an invitation for the origination of income-generating contracts through any method envisaged in legislation that will result in a legal agreement between the organ of state and a third party that produces revenue for the organ of state, and includes, but is not limited to, leasing and disposal of assets and concession contracts, excluding direct sales and disposal of assets through public auctions; and
- (e) **“the Act”** means the Preferential Procurement Policy Framework Act, 2000 (Act No. 5 of 2000).

3. FORMULAE FOR PROCUREMENT OF GOODS AND SERVICES

3.1. POINTS AWARDED FOR PRICE

3.1.1 THE 80/20 OR 90/10 PREFERENCE POINT SYSTEMS

A maximum of 80 or 90 points is allocated for price on the following basis:

$$\begin{array}{ccc} \mathbf{80/20} & \mathbf{or} & \mathbf{90/10} \\ \\ \mathbf{Ps = 80 \left(1 - \frac{Pt - P_{min}}{P_{min}} \right)} & \mathbf{or} & \mathbf{Ps = 90 \left(1 - \frac{Pt - P_{min}}{P_{min}} \right)} \end{array}$$

Where

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

3.2. FORMULAE FOR DISPOSAL OR LEASING OF STATE ASSETS AND INCOME GENERATING PROCUREMENT

3.2.1. POINTS AWARDED FOR PRICE

A maximum of 80 or 90 points is allocated for price on the following basis:

$$\begin{array}{ccc} \mathbf{80/20} & \mathbf{or} & \mathbf{90/10} \\ \\ \mathbf{Ps = 80 \left(1 + \frac{Pt - P_{max}}{P_{max}} \right)} & \mathbf{or} & \mathbf{Ps = 90 \left(1 + \frac{Pt - P_{max}}{P_{max}} \right)} \end{array}$$

Where

Ps = Points scored for price of tender under consideration
Pt = Price of tender under consideration

Pmax = Price of highest acceptable tender

4. POINTS AWARDED FOR SPECIFIC GOALS

- 4.1. In terms of Regulation 4(2); 5(2); 6(2) and 7(2) of the Preferential Procurement Regulations, preference points must be awarded for specific goals stated in the tender. For the purposes of this tender the tenderer will be allocated points based on the goals stated in table 1 below as may be supported by proof/ documentation stated in the conditions of this tender:
- 4.2. In cases where organs of state intend to use Regulation 3(2) of the Regulations, which states that, if it is unclear whether the 80/20 or 90/10 preference point system applies, an organ of state must, in the tender documents, stipulate in the case of—
- (a) an invitation for tender for income-generating contracts, that either the 80/20 or 90/10 preference point system will apply and that the highest acceptable tender will be used to determine the applicable preference point system; or
 - (b) any other invitation for tender, that either the 80/20 or 90/10 preference point system will apply and that the lowest acceptable tender will be used to determine the applicable preference point system, then the organ of state must indicate the points allocated for specific goals for both the 90/10 and 80/20 preference point system.

Table 1: Specific goals for the tender and points claimed are indicated per the table below. (Note to organs of state: Where either the 90/10 or 80/20 preference point system is applicable, corresponding points must also be indicated as such.

Note to tenderers: The tenderer must indicate how they claim points for each preference point system.)

The specific goals allocated points in terms of this tender	Number of points allocated (90/10 system) (To be completed by the organ of state)	Number of points allocated (80/20 system) (To be completed by the organ of state)	Number of points claimed (90/10 system) (To be completed by the tenderer)	Number of points claimed (80/20 system) (To be completed by the tenderer)
SPECIFIC GOALS	10	N/A		
Total	10	N/A		

DECLARATION WITH REGARD TO COMPANY/FIRM

- 4.3. Name of company/firm.....
- 4.4. Company registration number:
- 4.5. TYPE OF COMPANY/ FIRM
- ☐ Partnership/Joint Venture / Consortium
-

- ☐ One-person business/sole propriety
- ☐ Close corporation
- ☐ Public Company
- ☐ Personal Liability Company
- ☐ (Pty) Limited
- ☐ Non-Profit Company
- ☐ State Owned Company

[TICK APPLICABLE BOX]

4.6. I, the undersigned, who is duly authorised to do so on behalf of the company/firm, certify that the points claimed, based on the specific goals as advised in the tender, qualifies the company/firm for the preference(s) shown and I acknowledge that:

- i) The information furnished is true and correct;
- ii) The preference points claimed are in accordance with the General Conditions as indicated in paragraph 1 of this form;
- iii) In the event of a contract being awarded as a result of points claimed as shown in paragraphs 1.4 and 4.2, the contractor may be required to furnish documentary proof to the satisfaction of the organ of state that the claims are correct;
- iv) If the specific goals have been claimed or obtained on a fraudulent basis or any of the conditions of contract have not been fulfilled, the organ of state may, in addition to any other remedy it may have –
 - (a) disqualify the person from the tendering process;
 - (b) recover costs, losses or damages it has incurred or suffered as a result of that person's conduct;
 - (c) cancel the contract and claim any damages which it has suffered as a result of having to make less favourable arrangements due to such cancellation;
 - (d) recommend that the tenderer or contractor, its shareholders and directors, or only the shareholders and directors who acted on a fraudulent basis, be restricted from obtaining business from any organ of state for a period not exceeding 10 years, after the *audi alteram partem* (hear the other side) rule has been applied; and
 - (e) forward the matter for criminal prosecution, if deemed necessary.

.....
SIGNATURE(S) OF TENDERER(S)

SURNAME AND NAME:

DATE:

ADDRESS:
.....
.....
.....

SCHEDULE O: SBD 4 BIDDERS DISCLOSURE

1. PURPOSE OF THE FORM

Any person (natural or juristic) may make an offer or offers in terms of this invitation to bid. In line with the principles of transparency, accountability, impartiality, and ethics as enshrined in the Constitution of the Republic of South Africa and further expressed in various pieces of legislation, it is required for the bidder to make this declaration in respect of the details required hereunder.

Where a person/s are listed in the Register for Tender Defaulters and / or the List of Restricted Suppliers, that person will automatically be disqualified from the bid process.

2. Bidder's declaration

- 2.1 Is the bidder, or any of its directors / trustees / shareholders / members / partners or any person having a controlling interest¹ in the enterprise, employed by the state?

YES/NO

- 2.1.1 If so, furnish particulars of the names, individual identity numbers, and, if applicable, state employee numbers of sole proprietor/ directors / trustees / shareholders / members/ partners or any person having a controlling interest in the enterprise, in table below.

Full Name	Identity Number	Name of State institution

- 2.2 Do you, or any person connected with the bidder, have a relationship with any person who is employed by the procuring institution? **YES/NO**

- 2.2.1 If so, furnish particulars:

.....
.....

- 2.3 Does the bidder or any of its directors / trustees / shareholders / members / partners or any person having a controlling interest in the enterprise have any interest in any other related enterprise whether or not they are bidding for this contract?

YES/NO

- 2.4 If so, furnish particulars:

.....
.....

2 DECLARATION

¹ the power, by one person or a group of persons holding the majority of the equity of an enterprise, alternatively, the person/s having the deciding vote or power to influence or to direct the course and decisions of the enterprise.

I, the undersigned, (name)..... in submitting the accompanying bid, do hereby make the following statements that I certify to be true and complete in every respect:

- 3.1 I have read and I understand the contents of this disclosure;
- 3.2 I understand that the accompanying bid will be disqualified if this disclosure is found not to be true and complete in every respect;
- 3.3 The bidder has arrived at the accompanying bid independently from, and without consultation, communication, agreement or arrangement with any competitor. However, communication between partners in a joint venture or consortium² will not be construed as collusive bidding.
- 3.4 In addition, there have been no consultations, communications, agreements or arrangements with any competitor regarding the quality, quantity, specifications, prices, including methods, factors or formulas used to calculate prices, market allocation, the intention or decision to submit or not to submit the bid, bidding with the intention not to win the bid and conditions or delivery particulars of the products or services to which this bid invitation relates.
- 3.4 The terms of the accompanying bid have not been, and will not be, disclosed by the bidder, directly or indirectly, to any competitor, prior to the date and time of the official bid opening or of the awarding of the contract.
- 3.5 There have been no consultations, communications, agreements or arrangements made by the bidder with any official of the procuring institution in relation to this procurement process prior to and during the bidding process except to provide clarification on the bid submitted where so required by the institution; and the bidder was not involved in the drafting of the specifications or terms of reference for this bid.
- 3.6 I am aware that, in addition and without prejudice to any other remedy provided to combat any restrictive practices related to bids and contracts, bids that are suspicious will be reported to the Competition Commission for investigation and possible imposition of administrative penalties in terms of section 59 of the Competition Act No 89 of 1998 and or may be reported to the National Prosecuting Authority (NPA) for criminal investigation and or may be restricted from conducting business with the public sector for a period not exceeding ten (10) years in terms of the Prevention and Combating of Corrupt Activities Act No 12 of 2004 or any other applicable legislation.

I CERTIFY THAT THE INFORMATION FURNISHED IN PARAGRAPHS 1, 2 and 3 ABOVE IS CORRECT. I ACCEPT THAT THE STATE MAY REJECT THE BID OR ACT AGAINST ME IN TERMS OF PARAGRAPH 6 OF PFMA SCM INSTRUCTION 03 OF 2021/22 ON PREVENTING AND COMBATING ABUSE IN THE SUPPLY CHAIN MANAGEMENT SYSTEM SHOULD THIS DECLARATION PROVE TO BE FALSE.

.....
Signature

.....
Date

.....
Position

.....
Name of bidder

.....
Position

.....
Name of bidder

² Joint venture or Consortium means an association of persons for the purpose of combining their expertise, property, capital, efforts, skill and knowledge in an activity for the execution of a contract.

SBD 3.1 PRICING SCHEDULE – FIRM PRICE (PURCHASES)

NOTE: ONLY FIRM PRICES WILL BE ACCEPTED. NON-FIRM PRICES (INCLUDING PRICES SUBJECT TO RATES OF EXCHANGE VARIATIONS) WILL NOT BE CONSIDERED

IN CASES WHERE DIFFERENT DELIVERY POINTS INFLUENCE THE PRICING, A SEPARATE PRICING SCHEDULE MUST BE SUBMITTED FOR EACH DELIVERY POINT

Name of bidder.....	Bid number: CSR&T/BID16/2023/24
Closing Time: 11:00	Closing date: 24- OCTOBER -2023

OFFER TO BE VALID FOR 90 DAYS FROM THE CLOSING DATE OF BID.

ITEM NO.	QUANTITY	DESCRIPTION	BID PRICE IN RSA CURRENCY ** (ALL APPLICABLE TAXES INCLUDED)
----------	----------	-------------	---

- Required by:
- At:
- Brand and model
- Country of origin
- Does the offer comply with the specification(s)? *YES/NO
- If not to specification, indicate deviation(s)
- Period required for delivery
- *Delivery: Firm/not firm
- Delivery basis

Note: All delivery costs must be included in the bid price, for delivery at the prescribed destination.

** "all applicable taxes" includes value- added tax, pay as you earn, income tax, unemployment insurance fund contributions and skills development levies.

*Delete if not applicable

BID No: CSR&T&T/BID16/2023/24**PART A****INVITATION TO BID**

YOU ARE HEREBY INVITED TO BID FOR REQUIREMENTS OF THE (NAME OF DEPARTMENT/ PUBLIC ENTITY)					
BID NUMBER:	CSR&T/BID16/2023/24		CLOSING DATE: 24-OCTOBER -2023	CLOSING TIME: 11:00	
DESCRIPTION	APPOINTMENT OF A CONTRACTOR WITH CIDB GRADING LEVEL 9CE FOR THE SPECIAL MAINTENANCE OF KOPPIES TO SASOLBURG ROAD, P30/1 OF 61KM FOR THE DEPARTMENT OF COMMUNITY SAFETY, ROADS AND TRANSPORT FOR A PERIOD OF (THIRTY) 30 MONTHS.				
BID RESPONSE DOCUMENTS MAY BE DEPOSITED IN THE BID BOX SITUATED AT (STREET ADDRESS)					
45 PERM BUILDING					
CHARLOTTE MAXEKE STREET					
BLOEMFONTEIN					
9301					
BIDDING PROCEDURE ENQUIRIES MAY BE DIRECTED TO			TECHNICAL ENQUIRIES MAY BE DIRECTED TO:		
CONTACT PERSON	Me. W Makutoane		CONTACT PERSON	Mrs. EM Phalatse, Mr. BVJ Tshabala	
TELEPHONE NUMBER	051 409 8891		TELEPHONE NUMBER		
CELL NUMBER	066 476 2569		CELL NUMBER	082 059 9763 or 063 591 3030	
E-MAIL ADDRESS	makutoanew@freetrans.gov.za winnieprtscm@gmail.com		E-MAIL ADDRESS	evodia.phalatse@gmail.com bonganiv66@gmail.com	
SUPPLIER INFORMATION					
NAME OF BIDDER					
POSTAL ADDRESS					
STREET ADDRESS					
TELEPHONE NUMBER	CODE		NUMBER		
CELLPHONE NUMBER					
E-MAIL ADDRESS					
VAT REGISTRATION NUMBER					
SUPPLIER COMPLIANCE STATUS	TAX COMPLIANCE SYSTEM PIN:		OR	CENTRAL SUPPLIER DATABASE No:	MAAA
1. ARE YOU THE ACCREDITED REPRESENTATIVE IN SOUTH AFRICA FOR THE GOODS /SERVICES OFFERED?	☐ Yes ☐ No [IF YES ENCLOSE PROOF]		2. ARE YOU A FOREIGN BASED SUPPLIER FOR THE GOODS /SERVICES OFFERED?	☐ Yes ☐ No [IF YES, ANSWER THE QUESTIONNAIRE BELOW]	
QUESTIONNAIRE TO BIDDING FOREIGN SUPPLIERS					
IS THE ENTITY A RESIDENT OF THE REPUBLIC OF SOUTH AFRICA (RSA)? ☐ YES ☐ NO					
DOES THE ENTITY HAVE A BRANCH IN THE RSA? ☐ YES ☐ NO					
DOES THE ENTITY HAVE A PERMANENT ESTABLISHMENT IN THE RSA? ☐ YES ☐ NO					
DOES THE ENTITY HAVE ANY SOURCE OF INCOME IN THE RSA? ☐ YES ☐ NO					
IS THE ENTITY LIABLE IN THE RSA FOR ANY FORM OF TAXATION? ☐ YES ☐ NO					
IF THE ANSWER IS "NO" TO ALL OF THE ABOVE, THEN IT IS NOT A REQUIREMENT TO REGISTER FOR A TAX COMPLIANCE STATUS SYSTEM PIN CODE FROM THE SOUTH AFRICAN REVENUE SERVICE (SARS) AND IF NOT REGISTER AS PER 2.3 BELOW.					

TERMS AND CONDITIONS FOR BIDDING

1. BID SUBMISSION:

- 1.1. BIDS MUST BE DELIVERED BY THE STIPULATED TIME TO THE CORRECT ADDRESS. LATE BIDS WILL NOT BE ACCEPTED FOR CONSIDERATION.
- 1.2. **ALL BIDS MUST BE SUBMITTED ON THE OFFICIAL FORMS PROVIDED–(NOT TO BE RE-TYPED) OR IN THE MANNER PRESCRIBED IN THE BID DOCUMENT.**
- 1.3. THIS BID IS SUBJECT TO THE PREFERENTIAL PROCUREMENT POLICY FRAMEWORK ACT, 2000 AND THE PREFERENTIAL PROCUREMENT REGULATIONS, 2017, THE GENERAL CONDITIONS OF CONTRACT (GCC) AND, IF APPLICABLE, ANY OTHER SPECIAL CONDITIONS OF CONTRACT.

2. TAX COMPLIANCE REQUIREMENTS

- 2.1 BIDDERS MUST ENSURE COMPLIANCE WITH THEIR TAX OBLIGATIONS.
- 2.2 BIDDERS ARE REQUIRED TO SUBMIT THEIR UNIQUE PERSONAL IDENTIFICATION NUMBER (PIN) ISSUED BY SARS TO ENABLE THE ORGAN OF STATE TO VERIFY THE TAXPAYER'S PROFILE AND TAX STATUS.
- 2.3 APPLICATION FOR TAX COMPLIANCE STATUS (TCS) PIN MAY BE MADE VIA E-FILING THROUGH THE SARS WEBSITE WWW.SARS.GOV.ZA.
- 2.4 BIDDERS MAY ALSO SUBMIT A PRINTED TCS CERTIFICATE TOGETHER WITH THE BID.
- 2.5 IN BIDS WHERE CONSORTIA / JOINT VENTURES / SUB-CONTRACTORS ARE INVOLVED, EACH PARTY MUST SUBMIT A SEPARATE TCS CERTIFICATE / PIN / CSD NUMBER.
- 2.6 WHERE NO TCS PIN IS AVAILABLE BUT THE BIDDER IS REGISTERED ON THE CENTRAL SUPPLIER DATABASE (CSD), A CSD NUMBER MUST BE PROVIDED.
- 2.7 NO BIDS WILL BE CONSIDERED FROM PERSONS IN THE SERVICE OF THE STATE, COMPANIES WITH DIRECTORS WHO ARE PERSONS IN THE SERVICE OF THE STATE, OR CLOSE CORPORATIONS WITH MEMBERS PERSONS IN THE SERVICE OF THE STATE."

NB: FAILURE TO PROVIDE / OR COMPLY WITH ANY OF THE ABOVE PARTICULARS MAY RENDER THE BID INVALID.

SIGNATURE OF BIDDER:

.....

CAPACITY UNDER WHICH THIS BID IS SIGNED:

(Proof of authority must be submitted e.g. company resolution)

DATE:

.....

SPECIAL MAINTENANCE OF PRIMARY ROAD P30/1 KOPPIES TO SASOLBURG

THE CONTRACT

PART C1 : AGREEMENTS AND CONTRACT DATA

PART C2 : PRICING DATA

PART C1 : AGREEMENTS AND CONTRACT DATA

CONTENTS

<u>SECTION</u>	<u>DESCRIPTION</u>	<u>PAGE</u>
C1.1	FORM OF OFFER AND ACCEPTANCE	C1-3
C1.2	CONTRACT DATA	C1-7

C1.1 Form of Offer and Acceptance**OFFER**

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

SPECIAL MAINTENANCE OF PRIMARY ROAD P30/1 KOPPIES TO SASOLBURG

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

By the representative of the Bidder, deemed to be duly authorized, signing this part of this 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 PRICES 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 Bid Data, whereupon the Bidder becomes the party named as the Contractor in the Conditions of Contract identified in the Contract Data.

For the Bidder:	Witness:
..... Signature	 Signature
..... Name	 Name
..... 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 Bid Data and any addenda thereto as listed in the Bid 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 duly 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. Failure to fulfill 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 fully completed original copy of this 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 organisation:

.....

.....

Signature and name of witness:

Signature

.....
Name

Date:

Schedule of Deviations**Notes:**

1. The extent of deviations from the Bid documents issued by the Employer prior to the Bid closing date is limited to those permitted in terms of the Conditions of Bid,
2. A Bidder's covering letter shall not be included in the final contract document. Should any matter in such, letter, which constitutes a deviation as aforesaid become the subject of agreements reached during the process of, offer and acceptance, the outcome of such agreement shall be recorded here,
3. Any other matter arising from the process of offer and acceptance either as a confirmation, clarification or change to Bid documents and which it is agreed by the Parties becomes and obligation of the contract shall also be recorded here,
4. Any change or addition to the Bid documents arising from the above agreements and recorded here, shall also be incorporated into final draft or the Contract,

1. Subject
- Details
2. Subject
- Details

By the duly authorised representatives signing this Schedule of Deviations, the Employer and the Bidder agree to and accept the foregoing Schedule of Deviations as the only deviations from and amendments to the documents listed in the Bid Data and addenda thereto as listed in the Bid Schedules, as well as any confirmation, clarification or changes to the terms of the offer agreed by the Bidder and the Employer during this process of offer and acceptance.

It is expressly agreed that no other matter whether in writing, oral communication or implied during the period between the issue of the Bid documents and the receipt by the Bidder of a completed signed copy of this Agreement shall have any meaning or effect in the contract between the parties arising from this Agreement.

For the Bidder:

For the Employer:

..... Signature

..... Name

.....

..... Capacity

Name and address of organisation:

Name and address of organisation:

.....

.....

.....

.....

BID No: CSR&T&T/BID16/2023/24

.....

.....

..... Witness Signature

..... Witness 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 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

CONTENTS

<u>SECTION</u>	<u>DESCRIPTION</u>	<u>PAGE</u>
C1.2.1	CONDITIONS OF CONTRACT	C1-8
C1.2.2	CONTRACT SPECIFIC DATA	C1-10
C1.2.3	DATA PROVIDED BY THE TENDERER	C1-16

C1.2.1 CONDITIONS OF CONTRACT**GENERAL CONDITIONS OF CONTRACT**

This Contract will be based on the “General Conditions of Contract for Construction Works – 2ND Edition 2015”, issued by the South African Institution of Civil Engineering. (Short title: “General Conditions of Contract 2015”).

It is agreed that the only variations from the General Conditions of Contract 2015 are those set out hereafter under "Contract Specific Conditions".

CONTRACT SPECIFIC CONDITIONS**1. GENERAL**

These Contract Specific Conditions (CSC) form an integral part of the Contract. The Contract Specific Conditions shall amplify, modify or supersede, as the case may be, the General Conditions of Contract 2015 to the extent specified below, and shall take precedence and shall govern.

The clauses of the Special Conditions hereafter are numbered "CSC" followed in each case by the number of the applicable clause or subclause in the General Conditions of Contract 2015, and the applicable heading, or (where a new special condition that has no relation to the existing clauses is introduced) by a number that follows after the last clause number in the General Conditions, and an appropriate heading.

2. AMENDMENTS TO THE GENERAL CONDITIONS OF CONTRACT**CSC 2.3 Specific Approval of the Employer required**

“The Engineer or Contractor must obtain special approval or consent from the Employer for the decisions in the following clauses:

Clauses 2.2.3, 3.1.2, 3.2.1, 3.2.4, 4.7, 4.12.1, 4.11.2, 5.7.3, 5.8.1, 5.10.1, 5.11.2, 5.11.3, 5.12.1, 5.13.2, 5.14.1, 5.16.1, 6.3.2, 6.4, 6.5.1, 6.6.1, 6.10.1, 6.10.6, 6.11, 7.8.2.2, 8.2.2.2, 10.1.5.”

3.1 Add the following

“after approval by the Employer”

CSC 2.1.2 Compliance with applicable laws**CSC 2.1.2.5 Health and safety**

Add the following :

"The Occupational Health and Safety Act No 85 and Amendment Act No 181 of 1993, and the Construction Regulations GNR.929 of 25 June 2017 (Government Gazette No 25207 of 18 July 2003, Notice No R1010) will in all respects be applicable to this contract, including all regulations pertaining to the COVID 19 compliance."

(i)

(ii)**CSC
SCHEDULE****CONTRACT PRICE ADJUSTMENT***Paragraph 1*

Adjust the definitions of "L", "P", "M" and "F" in the 4th to the 7th sub-paragraphs with the following :

Definition of "L" :

Insert "(Consumer Price Index)" after "P0141.1" in the third line.

Insert "(Consumer Price Index and Percentage Change according to Urban Area)" after "Table 21" in the third line.

Definition of "P" :

Insert "(Production Price Index)" after "P0142.1" in the second line.

Insert "(Production Price Index for Selected Materials, item 'Civil Engineering Plant')" after "Table 16" in the second line.

Definition of "M" :

Insert "(Production Price Index)" after "P0142.1" in the second line

Insert "(Production Price Index for Materials used in Certain Industries, item 'Civil Engineering Plant')" after "Table 15" in the second line

Definition of "F" :

Insert "(Production Price Index)" after "P0142.1" in the second line

Insert "(Production Price Index for Selected Materials, item Diesel Oil – Coast and Witwatersrand)" after "Table 16" in the second line

[Note: The indices are obtainable in www.statssa.gov.za. The latest indices for L (certain urban areas only), P, M and F, are more readily obtainable in www.safcec.org.za under "CPAF Indices"] upon registration with Safcec

Paragraph 2 : Assessment of amount subject to adjustment

Add the following to the paragraph defining "E" :

"Where the amount is based on current costs de-escalated to the base month, or where daywork is calculated at rates tendered in a daywork schedule, the costs shall not be included in the value of "E".

C1.2.2 CONTRACT SPECIFIC DATA

ITEM No:	REFERENCE TO:	CLAUSE	INFORMATION
1	Contractor	1.1.1.9	
2	Defects Liability Period	1.1.1.13	24 Months from issuing of Certificate of Practical Completion
3	Latent Defects Liability Period	5.16.3	Should there be any defects within Fifteen (15) years after final completion, the Contractor will be fully liable for latent defects
4	Practical Completion	1.1.1.14	The time for achieving Practical Completion is calculated from commencement date, excluding year end breaks.
5	Employer	1.1.1.15	Department of Community Safety, Roads and Transport
6	Engineer	1.1.1.16	Department of Community Safety, Roads and Transport
7	Address of the Employer	1.2.1.2	Perm Building, 45 Charlotte Maxeke Street, Bloemfontein
8	Address of the Contractor	1.2.1.2	Physical Address: Postal Address: Telephone Number (Office): Facsimile Number (Office): E-mail Address (Office):

9	Commencement of	5.2	Within 14 days after issuing of the appointment letter
---	-----------------	-----	--

BID No: CSR&T&T/BID16/2023/24

	Work		
10	Documentation required before commencement of the Works	5.3.1	Health & Safety Plan (Refer to Clause 4.3) Revised Programme & Cash flow Projection (Refer to Clause 5.6) Security (Refer to Clause 6.2) Insurance (Refer to Clause 8.6)
11	Time to submit the documentation required before commencement of the Works	5.3.2	14 Days
12	Special non-working days		Sundays and all public holidays as well as year-end breaks.
13	Programme of Works	5.6.1	Should be submitted within 14 days after the Commencement Date
14	Non-working days	5.8.1	Sundays and all public holidays as well as year-end breaks.
15	Penalty for failing to complete the Works on time	5.13.1	R40,000 per calendar day
16	Security	6.2.1	Performance Guarantee of 10% of the value of the Works which will be handed back after practical completion, to be submitted within 14 days after the commencement date. Expiry date should state “until the issuing of Practical Completion certificate”
17	Day work percentages	6.5.1.2.3	Refer to section C1.2.8 of the COTO Specification

BID No: CSR&T&T/BID16/2023/24

18	Contract Price Adjustment	6.8.2	The following values for the different factors are to be used: X = 0.10 a = 0.10 - Labour b = 0.55 - Equipment c = 0.15 - Material d = 0.20 - Fuel The different values for the calculation of the price adjustment factor shall be for the area of Free State: Other urban areas. The Diesel index shall be for the Witwatersrand Area. The Base month is one month prior to submission of quotations.
19	Special Materials	6.8.3	Special materials shall be limited to bitumen and bituminous products.
20	Materials on Site	6.10.1.5	80% payment for materials on site
21	Retention Money	6.10.3	Two retention Guarantees of 50% each of the value of the retention money are compulsory as part of documentation to be submitted within 14 days after the commencement date; one will be handed back at practical completion and the other 24 months after final completion. There will be no retention monies deducted on interim certificates.
22	Insurances	8.6	R0-00
			R0-00
23	Limited of indemnity	8.6.1.3	R5,000,000-00 per claim, number of claims unlimited
24	Other Insurances	8.6.1.5	R0-00
25	Dispute Resolution	10.5.1	Adjudication
26	Adjudication Board Members	10.5.3	Only Three members required
27	Dispute Resolution	10.7.1	Adjudication (If there are no agreements, then court proceeding will be preferred)
28	Targeted Subcontractors (ABE's)	30% of Contract Value (Excl Contingencies) must be subcontracted to Local Contractors appointed in terms of attached specification.	

BID No: CSR&T&T/BID16/2023/24

29	Targeted Local labour	1. Minimum Labour Employment per R 1 Million - 4 for Conventional should be appointed with a minimum of six months at a payment rate of R186/day. 2. 25% of labour must be retained for the entire duration of the contract. 3. Recruitment of annual labour target shall be as follows: • 30% - at the beginning of the financial year • 30% - three months after the initial appointment • 40% - at midway into the financial year 4. The employment demographics are as follows: • Youth – 60% • Female – 60% • Disabled – 2% 5. Wherever feasible labour will be deployed to Local Municipalities for service delivery at the cost of the Contractor.
30	Temporary Suspension of Works	Planned Annual allocated budget available can be reduced at the Employer's discretion. In the event that annual budget is reduced or exhausted, the Contractor shall not be allowed stop the Works and or claim interest on the unpaid Works. No claim shall be submitted to the Department once the budget is depleted.
31	Socio – Economic of Community	1% of Contract Value shall be invested into local Community.
32	Skills Development	1. Two (2) Civil Engineering Students shall be appointed for experiential Training with stipend of R10 000.00 each per month, signed off reports must be submitted to respective Departmental Project Managers. 2. Members of Community must also be trained in Labour Intensive Works

.....
SIGNATURE

C1.2.3 DATA PROVIDED BY THE TENDERER

Clause 6.8.3 of the GCC:

Special materials	Unit on which variation will be determined *	Rate or price for the base Month (excluding VAT) **

Notes:

- * Indicate whether the material will be delivered in bulk or in containers.
- ** The price for special materials is only the price for the material and does not include the cost of transport, labour or any other costs. When called upon to do so, the Tenderer shall substantiate the above prices with acceptable documentary evidence.

.....
SIGNATURE

PART C2 PRICING DATA

**DEPARTMENT OF COMMUNITY SAFETY, ROADS AND
TRANSPORT**

**THE SPECIAL MAINTENANCE OF ROAD P30/1 BETWEEN KOPPIES AND
SASOLBURG FOR A PERIOD OF 30 MONTHS
C2 –PRICING DATA**

C2.1 PRICING INSTRUCTIONS

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. 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 tenderer 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 schedule of quantities, the specifications or elsewhere, but of which the quantity of work is not measured in units.

Bill of Quantities

- 1 Measurement and payment shall be in accordance with the relevant provisions of the COTO Standard Specifications for Road and Bridge Works for South African Road Authorities (2020 Edition), subject to the following amendments and additions:
- 2 The units of measurement described in the Bill of Quantities are metric units. Abbreviations used in the Bill of Quantities are as follows:

mm	=	millimetre
m	=	metre
km	=	kilometre
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
MPa	=	megapascal
h	=	hour
kg	=	kilogram
t	=	ton (1000 kg)
No.	=	number
sum	=	lump sum
MN	=	meganewton
MN.m	=	meganewton-metre
P C sum	=	Prime Cost sum
Prov sum	=	Provisional sum

SPECIAL MAINTENANCE OF PRIMARY ROAD P30/1 KOPPIES TO SASOLBURG FOR A PERIOD OF 30 MONTHS.
BID No: CR&T/BID16/2023/24

%	=	per cent
kW	=	Kilowatt
man-month	=	Man per Month
man-shift	=	Man per Shift
Person.Month	=	Person per Month

- 3 For the purposes of the 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 COTO Standard Specifications for Road and Bridge Works for South African Road Authorities (2020 Edition), Quantity: The number of units of work for each item.
- Rate: The agreed payment per unit of measurement.
- Amount: The product of the quantity and the agreed rate for an item.
- Lump sum: An agreed amount for an item, the extent of which is described in the Bill of Quantities but the quantity of work of which is not measured in any units.
- 4 Unless otherwise stated, items are measured net in accordance with the drawings, and no allowance is made for waste. Attention is directed to the provisions of clause 1220 of the standard specifications regarding the measurements of quantities for payment. Except where specified otherwise than in clause 1220, the net measurement or mass of the finished work in place shall be taken for payment, and any volume or mass of work in excess of that prescribed, shall be excluded.
- 5 The prices and rates to be inserted in the Bill of Quantities are to be the full inclusive prices for the work described under the several items. Such prices and rates shall cover all costs and expenses that may be required in and for the execution of the work described, 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.
- Such prices and rates shall also cover 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 the cost of all general risks, liabilities, and obligations set forth or implied in the Contract Data, as well as overhead charges and profit. Reasonable prices shall be inserted, as these will be used as a basis for assessment of payment for additional work that may have to be carried out.
- 6 A price or rate is to be entered against each item in the Bill of Quantities, whether the quantities are stated or not. An item against which no price is entered shall not be paid for but will be considered to be covered by other prices or rates elsewhere in the Bill of Quantities.
- If the tenderer 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
- 7 Reasonable compensations will be received where no pay item appears in respect of work required in terms of the Contract, which is not covered in any other pay item.
- 8 The short descriptions of the items of payment given in the Bill of Quantities are only for the purposes of identifying the items. More details regarding the extent of the work under each item appear in the scope of work, 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.
9. The item numbers appearing in the Bill of Quantities refer to the corresponding item numbers in the COTO Standard Specifications for Road and Bridge Works for South African Road Authorities (2020 Edition),. Item numbers prefixed by the letter B refer to payment items described under part B of the project specifications, those with C to payment items described under part C, and so on for further parts of the project specifications.

Item numbers in schedule B of the schedule of quantities are, in addition, preceded by the number of each separate part of schedule B of the schedule of quantities, e.g. payment item 62.02 described in the standard specifications (clause 6210), when used in part 3 of schedule B of the schedule of quantities, would be numbered 3/62.02, and if this payment item had been amended in part B of the project specifications, the payment item would be indicated as 3/B62.02.

- 10 The quantities set out in the schedule of quantities are only approximate quantities. The quantities of work finally accepted and certified for payment, and not the quantities given in the schedule 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 schedule 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 1209 (a) of the standard specifications.

- 11 The amount of work or the quantities of material stated in the schedule 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
- 12 The statement of quantities of material or the amount of work in the schedule of quantities shall not be regarded as authorization 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
- 13 The provisions of clause 10.1 of the general conditions of contract shall apply to provisional sums and prime cost sums.
- 14 Subject to the conditions stated in paragraph 15 below, the rates and lump sums filled in by the tenderer in the schedule of quantities shall be final and binding with regard to submitting the tender, and may not be adjusted should there be any mistakes in the extensions thereof and in the total sums appearing in the tender. Should there be any discrepancies between the tender sum and the correctly extended and totalled bill of quantities, the tendered sum will be regarded as being correct, and the Employer shall have the right to make adjustments to the tender rates to reconcile the tender sum with the total of the bill of quantities. In such an event the Contractor will be consulted but, failing agreement between the parties, the decision of the Employer shall be final and binding. Adjustment of the tender rates will take place prior to the signing of the contract. In their own interest tenderers must make doubly sure of the correctness of their tendered rates, the extensions and the tender sum.
- 15 A tender may be rejected if the unit rates or lump sums for some of the items in the schedule of quantities are, in the opinion of the Employer, unreasonable or out of proportion, and if the tenderer 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.
- 16 Those parts of the contract to be constructed using labour-intensive methods have been marked in the bill of quantities with the letters LI in a separate column filled in 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 items marked with the letters LI are not necessarily an exhaustive list of all the activities, which must be done by hand, and this clause does not over-ride any of the requirements in the generic labour intensive specification in the Scope of Works.
- 17 Payment for items which are designated to be constructed labour-intensively (either in this schedule or in the Scope of Works) will not be made unless they are constructed using labour-intensive methods. Any unauthorized use of plant to carry out work, which was to be done labour-intensively will not be condoned, and any works so constructed will not be certified for payment.

C2.2 BILL OF QUANTITIES

C1.2	GENERAL REQUIREMENTS AND PROVISIONS
C1.3	CONTRACTOR'S SITE ESTABLISHMENT AND GENERAL OBLIGATIONS
C1.4	FACILITIES FOR THE ENGINEER
C1.5	ACCOMMODATION OF TRAFFIC
C1.6	CLEARING AND GRUBBING
C1.7	LOADING AND HAULING
C2.1	GENERAL REQUIREMENTS AND TRENCHING FOR SERVICES
C4.1	BORROW MATERIALS
C4.4	COMMERCIAL MATERIALS
C4.5	ALTERNATIVE MATERIALS
C5.3	ROAD PAVEMENT LAYERS
C5.4	STABILISATION
C5.5	RECONSTRUCTION OF PAVEMENT LAYERS
C8.1	PRIME COAT
C8.2	COVER SPRAYS, FOG SPRAYS AND REJUVENATION SPRAYS
C10.1	GENERAL REQUIREMENTS FOR SURFACE TREATMENTS
C11.9	FINISHING THE ROAD AND ROAD RESERVE AND TREATING OLD ROADS
D1010	TRAINING, COACHING, GUIDANCE, MENTORING AND ASSISTANCE

SPECIAL MAINTENANCE OF PRIMARY ROAD P30/1 KOPPIES TO SASOLBURG FOR A PERIOD OF 30
MONTHS

BID No: CSR&T/BID16/2023/24

SPECIAL MAINTENANCE OF PRIMARY ROAD P30/1 KOPPIES TO SASOLBURG FOR A PERIOD OF 30 MONTHS

BID No: CSR&T/BID16/2023/24

C1.2			KOPPIES-SASOLBURG P30/1	GENERAL REQUIREMENTS AND PROVISIONS			
ITEM			DESCRIPTION	UNIT	QTY	RATE	AMOUNT
C1.2.1			Environmental Management				
	C1.2.1.1		Monitoring of compliance with and reporting on the EMP	month	30		
C1.2.3			Routine road maintenance of existing public roads within the Site of the Works or other public roads outside the Site of the Works which are used as detours				
	C1.2.3.11		Other road maintenance work ordered by the Engineer	provisional sum	Prov	Sum	R 200 000,00
	C1.2.3.12		Handling cost, profit and all other charges in respect of item C1.2.3.11	percentage (%)	R 200 000,00		
C1.2.5			Safety				
	C1.2.5.1		Health and safety plan	lump sum	lump		
	C1.2.5.2		Implementation of health and safety plan	month	30		
C1.2.8			Dayworks				
	C1.2.8.1		Personnel				
		(a)	Unskilled labourer	hour (h)	50		
		(b)	Semi-skilled labourer	hour (h)	50		
		(c)	Skilled labourer	hour (h)	50		
		(d)	Gang leader	hour (h)	50		
		(e)	Foreman	hour (h)	50		
		(f)	Skilled artisan	hour (h)	50		
	C1.2.8.2		Construction equipment (<i>specify size and/or model number</i>)				
TOTAL CARRIED FORWARD TO SUMMARY							

SPECIAL MAINTENANCE OF PRIMARY ROAD P30/1 KOPPIES TO SASOLBURG FOR A PERIOD OF 30
MONTHS
BID No: CSR&T/BID16/2023/24

CARRIED FORWARD							
				UNIT	QTY	RATE	AMOUNT
		(a)	Motor grader	hour (h)	50		
		(b)	Vibratory roller	hour (h)	50		
		(c)	Pneumatic roller	hour (h)	50		
		(d)	Front end loader	hour (h)	50		
		(e)	Tractor loader backhoe	hour (h)	50		
		(f)	Excavator	hour (h)	50		
		(g)	Compressor	hour (h)	50		
		(h)	Other equipment	hour (h)	50		
	C1.2.8.3		Vehicles				
		(a)	Light delivery vehicle	kilometre (km)	3000		
		(b)	Flatbed truck	kilometre (km)	3000		
		(c)	Dump truck	kilometre (km)	3000		
TOTAL CARRIED FORWARD TO SUMMARY							

SPECIAL MAINTENANCE OF PRIMARY ROAD P30/1 KOPPIES TO SASOLBURG FOR A PERIOD OF 30
MONTHS
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CARRIED FORWARD								
ITEM			DESCRIPTION	UNIT	QTY	RATE	AMOUNT	
BC 1.2.1	BC 1.2.11	(i)	Laboratory Tests for Engineer's Quality Assurance/Acceptance control	provisional sum	Prov	Cost	R	6 000 000,00
		(ii)	Handling cost, profit and all other charges in respect of item BC1.2.11 (i)	percentage (%)	R	6 000 000,00		
BC 1.2.1	BC 1.2.12	(i)	Site Survey for Engineer's Quality Assurance/Acceptance control	provisional sum	Prov	Cost	R	2 000 000,00
		(ii)	Handling cost, profit and all other charges in respect of item BC1.2.12 (i)	percentage (%)	R	2 000 000,00		
BC 1.2.1	BC 1.2.13	(i)	Occupational Health & Safety for Engineer's Quality Assurance/Acceptance control	provisional sum	Prov	Cost	R	700 000,00
		(ii)	Handling cost, profit and all other charges in respect of item BC1.2.13 (i)	percentage (%)	R	700 000,00		
BC 1.2.1	BC 1.2.14	(i)	Environmental Compliance Agent for Engineer's Quality Assurance/Acceptance control	provisional sum	Prov	Cost	R	700 000,00
		(ii)	Handling cost, profit and all other charges in respect of item BC1.2.14 (i)	percentage (%)	R	700 000,00		
TOTAL CARRIED FORWARD TO SUMMARY								

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C1.3			KOPPIES-SASOLBURG P30/1	CONTRACTOR'S SITE ESTABLISHMENT AND GENERAL OBLIGATIONS			
ITEM			DESCRIPTION	UNIT	QTY	RATE	AMT
PC1.3.1			The Contractor's general obligations				
	C1.3.1.1		Fixed obligations	lump sum	1		
	C1.3.1.3		Time-related obligations	month	30		
C1.3.2			Contract sign boards	(m ²)	20		
			NOTE: The combined total tendered for subitems (a) and (c) should not exceed 15% of the tender				
TOTAL CARRIED FORWARD TO SUMMARY							

SPECIAL MAINTENANCE OF PRIMARY ROAD P30/1 KOPPIES TO SASOLBURG FOR A PERIOD OF 30
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SPECIAL MAINTENANCE OF PRIMARY ROAD P30/1 KOPPIES TO SASOLBURG FOR A PERIOD OF 30 MONTHS

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C1.4		KOPPIES-SASOLBURG P30/1	FACILITIES FOR THE ENGINEER			
ITEM		DESCRIPTION	UNIT	QTY	RATE	AMT
C1.4.1		Site accommodation				
	C1.4.1.1	Offices and conference room	(m ²)	170		
	C1.4.1.2	Laboratories	(m ²)	160		
	C1.4.1.3	Open concrete working floors and verandas	(m ²)	240		
	C1.4.1.4	Roofs over open concrete working floors and verandas	(m ²)	240		
	C1.4.1.5	Store rooms inside the laboratory	(m ²)	10		
	C1.4.1.6	Car ports	(No.)	7		
	C1.4.1.7	Ablution unit	(No.)	4		
	C1.4.1.8	Change room with a shower	(No.)	2		
	C1.4.1.9	Kitchen unit	(No.)	1		
	C1.4.1.13	Rented housing paid for by the Contractor	provisional sum	Prov	Sum	R 260 000,00
	C1.4.1.14	Contractor's handling costs, profit and all other charges in respect of item C1.4.1.13	(%)	R 260 000,00		
C1.4.2		Items measured by area				
	C1.4.2.1	Shelving as specified, complete with brackets	(m ²)	25		
	C1.4.2.2	Work benches with a concrete slab top	(m ²)	50		
	C1.4.2.3	Work-benches with a wooden top	(m ²)	50		
	C1.4.2.4	Constant-temperature baths of concrete and/or plastered brick	(m ²)	5		
	C1.4.2.5	Concrete footings and pedestals for laboratory equipment	(m ²)	10		
	C1.4.2.6	Roller blinds, opaque type	(m ²)	60		
	C1.4.2.7	Venetian blinds	(m ²)	60		
	C1.4.2.8	Notice boards	(m ²)	4		
C1.4.3		Items measured by number				
	C1.4.3.1	Office swivel chair	(No.)	5		
TOTAL CARRIED FORWARD TO SUMMARY						

SPECIAL MAINTENANCE OF PRIMARY ROAD P30/1 KOPPIES TO SASOLBURG FOR A PERIOD OF 30 MONTHS

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CARRIED FORWARD						
			UNIT	QTY	RATE	AMT
	C1.4.3.2	Office chair	(No.)	10		
	C1.4.3.3	Draughtsman's stool	(No.)			
	C1.4.3.4	Laboratory high chair	(No.)	4		
	C1.4.3.5	Office desk with 3 drawers (<i>at least one lockable drawer</i>)	(No.)	5		
	C1.4.3.6	Typist desk (<i>L-shaped</i>)	(No.)	4		
	C1.4.3.8	Conference table	(No.)	1		
TOTAL CARRIED FORWARD TO SUMMARY						

SPECIAL MAINTENANCE OF PRIMARY ROAD P30/1 KOPPIES TO SASOLBURG FOR A PERIOD OF 30
MONTHS

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MONTHS
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CARRIED FORWARD						
			UNIT	QTY	RATE	AMT
	C1.4.3.9	Bookcase	(No.)	1		
	C1.4.3.10	Filing cabinet	(No.)	2		
	C1.4.3.11	General purpose steel cabinet with shelves	(No.)	2		
	C1.4.3.13	220/250 volt power outlet plug point	(No.)	20		
	C1.4.3.14	400/231 volt 3-phase power outlet plug point	(No.)	2		
	C1.4.3.15	Single 1500m, 58 watt fluorescent tube ceiling light	(No.)	2		
	C1.4.3.16	Single 1500mm, 22 watt LED tube ceiling light	(No.)	4		
	C1.4.3.17	11 watt compact fluorescent bulb ceiling light	(No.)	4		
	C1.4.3.18	7 watt LED bulb ceiling light	(No.)	4		
	C1.4.3.19	Wash-hand basin	(No.)	2		
	C1.4.3.20	Laboratory basin	(No.)	2		
	C1.4.3.21	Extractor fan	(No.)	2		
	C1.4.3.23	Fire extinguisher 9,0 kg, dry powder type	(No.)	3		
	C1.4.3.25	Heater	(No.)	2		
	C1.4.3.26	Concrete specimen curing bath	(No.)	2		
	C1.4.3.27	Waste paper basket	(No.)	2		
	C1.4.3.28	UPS / Voltage stabiliser	(No.)	2		
	C1.4.3.29	A3 / A4 colour printer, copier, scanner	(No.)	2		
	C1.4.3.30	A4 colour printer, copier, scanner	(No.)	2		
	C1.4.3.31	Rain gauge	(No.)	2		
TOTAL CARRIED FORWARD TO SUMMARY						

SPECIAL MAINTENANCE OF PRIMARY ROAD P30/1 KOPPIES TO SASOLBURG FOR A PERIOD OF 30 MONTHS

BID No: CSR&T/BID16/2023/24

CARRIED FORWARD			UNIT	QTY	RATE	AMT
	C1.4.3.32	Minimum/maximum atmospheric temperature gauge	(No.)	1		
	C1.4.3.33	Digital thermometer	(No.)	1		
	C1.4.3.35	3,0m aluminium straight edge complete with two measuring wedges	(No.)	1		
	C1.4.3.36	Measuring wheel	(No.)	2		
	C1.4.3.37	First aid kit	(No.)	2		
	C1.4.3.38	Standpipe complete with 30m of 19mm dia. heavy duty hose pipe	(No.)	2		
TOTAL CARRIED FORWARD TO SUMMARY						

SPECIAL MAINTENANCE OF PRIMARY ROAD P30/1 KOPPIES TO SASOLBURG FOR A PERIOD OF 30
MONTHS

BID No: CSR&T/BID16/2023/24

SPECIAL MAINTENANCE OF PRIMARY ROAD P30/1 KOPPIES TO SASOLBURG FOR A PERIOD OF 30 MONTHS

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CARRIED FORWARD						
			UNIT	QTY	RATE	AMT
C1.4.4		Prime cost items				
	C1.4.4.1	Cell phones costs, including pro-rata rentals, for calls made in connection with contract administration	(PC) sum	prime	cost	R 25 000,00
	C1.4.4.2	Handling costs and profit in respect of item C1.4.4.1	(%)	R 25 000,00		
	C1.4.4.3	The provision of a direct independent telephone line for the Engineer, including the monthly	(PC) sum	prime	cost	R 50 000,00
	C1.4.4.4	Handling costs and profit in respect of item C1.4.4.3	percentage (%)	R 50 000,00		
	C1.4.4.5	The provision of internet connectivity and WiFi data for Engineer's site staff	(PC) sum	prime	cost	R 3 000,00
	C1.4.4.6	Handling costs and profit in respect of item C1.4.4.5	percentage (%)	R 3 000,00		
	C1.4.4.7	The provision of paper and ink for a combination colour	(PC) sum	prime	cost	R 5 000,00
	C1.4.4.8	Handling costs and profit in respect of item C1.4.4.7	percentage (%)	R 5 000,00		
	C1.4.4.9	The provision of a complete 220/250 volt single phase electrical power installation, including all poles,	(PC) sum	prime	cost	R 2 000,00
	C1.4.4.10	Handling costs and profit in respect of item C1.4.4.9	percentage (%)	R 2 000,00		
	C1.4.4.11	The provision of a complete 440/231 volt three phase electrical power installation, including all poles, insulators, wiring, switchboards, mains connections, meters etc.	(PC) sum	prime	cost	R 4 000,00
	C1.4.4.12	Handling costs and profit in respect of item C1.4.4.11	percentage (%)	R 4 000,00		
	C1.4.4.13	Provision of a 440/231 volt three phase electricity generator if electricity from a power supply authority is not available on site	(PC) sum	prime	cost	R 25 000,00
	C1.4.4.14	Handling costs and profit in respect of item C1.4.4.13	(%)	R 25 000,00		
C1.4.5		Services at site offices, laboratories and site accommodation				
	C1.4.5.1	Fixed costs	lump sum	1		
	C1.4.5.2	Running costs	month	30		
TOTAL CARRIED FORWARD TO SUMMARY						

SPECIAL MAINTENANCE OF PRIMARY ROAD P30/1 KOPPIES TO SASOLBURG FOR A PERIOD OF 30 MONTHS

BID No: CSR&T/BID16/2023/24

CARRIED FORWARD						
			UNIT	QTY	RATE	AMT
C1.4.6		Office staff				
	C1.4.6.1	Secretary / receptionist	month	30		
	C1.4.6.2	Technical assistant	month	30		
C1.4.7		Site inspection transport				
	C1.4.7.1	Provision of a bus, mini-bus or combi van for site inspection purposes	per day	30		
	C1.4.7.2	Travel on site	kilometre (km)	3000		
C1.4.8		Site security measures for the Engineer's facilities				
	C1.4.8.1	Supply and installation of all required security measures at the Engineer's site offices and laboratories	lump sum	1		
	C1.4.8.2	Provision of security guards / watchmen and an armed response service at the Engineer's site offices	month	30		
	C1.4.8.3	Supply and installation of all required security measures at the Engineer's site accommodation	lump sum	1		
TOTAL CARRIED FORWARD TO SUMMARY						

SPECIAL MAINTENANCE OF PRIMARY ROAD P30/1 KOPPIES TO SASOLBURG FOR A PERIOD OF 30 MONTHS
BID No: CSR&T/BID16/2023/24

C1.5			KOPPIES-SASOLBURG P30/1	ACCOMMODATION OF TRAFFIC			
			DESCRIPTION	UNIT	QTY	RATE	AMT
C1.5.2			Accommodation of vehicular traffic	month	30		
C1.5.4			Construction of temporary deviations				
			<i>Gravelling & repair of temporary deviations and existing gravel shoulders used as temporary deviations G7 material from cut & borrow fill</i>	(m ³)	15000		
C1.5.5			Maintenance of temporary deviations				
	C1.5.5.9		Grading of temporary deviations and existing roads used as detours	(km)	68		
	C1.5.5.10		Watering of temporary deviations and existing roads used as detours	(kl)	20000		
C1.5.7			Temporary traffic control facilities				
	C1.5.7.1		Delineators including mounting bases and ballast:				
		(a)	Single sided, reversible left or right (1200mm x 300mm)	(No.)	600		
		(b)	Double sided, reversible left or right (800mm x 200mm)	(No.)	700		
	C1.5.7.2		Traffic cones, minimum height 750mm	(No.)	700		
	C1.5.7.3		Flagmen	man-shift	2144		
	C1.5.7.4		Traffic controllers	man-shift	1100		
TOTAL CARRIED FORWARD TO SUMMARY							

SPECIAL MAINTENANCE OF PRIMARY ROAD P30/1 KOPPIES TO SASOLBURG FOR A PERIOD OF 30
MONTHS
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CARRIED FORWARD							
				UNIT	QTY	RATE	AMT
	C1.5.7.5		Provision of illuminated traffic signs:				
		(a)	Sign mounted flashing amber lights mounted on a backing board which is:				
		(i)	900mm wide x 150mm high	(No.)	100		
		(ii)	1200mm wide x 200mm high	(No.)	200		
		(b)	Flashing LED illuminated arrow board	(No.)	10		
		(c)	Illuminated road sign – R & TR series	(No.)	300		
		(d)	Illuminated road sign – TW series	(No.)	300		
TOTAL CARRIED FORWARD TO SUMMARY							

SPECIAL MAINTENANCE OF PRIMARY ROAD P30/1 KOPPIES TO SASOLBURG FOR A PERIOD OF 30
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BID No: CSR&T/BID16/2023/24

CARRIED FORWARD							
				UNIT	QTY	RATE	AMT
		(e)	Mobile variable message sign	(No.)	10		
	C1.5.7.6		Maintenance of illuminated traffic signs:				
		(a)	Sign mounted flashing amber lights (<i>a pair of two lights mounted on a separate backing board</i>)	month	28		
		(b)	Flashing LED illuminated arrow board	month	28		
		(c)	Illuminated road sign – R & TR series	month	28		
		(d)	Illuminated road sign – TW series	month	28		
		(e)	Mobile variable message sign	month	28		
		(f)	Mobile variable message sign with a speed measuring and display capability	month	28		
	C1.5.7.7		Traffic calming devices:				
		(a)	25mm high x 100mm wide asphalt rumble strips	(m)	500		
		(b)	50mm high x 500m wide asphalt rumble strips	(m)	50		
		(c)	150mm high x 3m wide asphalt speed control humps	(m)	50		
	C1.5.7.9		Cleaning of traffic control facilities	month	28		
TOTAL CARRIED FORWARD TO SUMMARY							

SPECIAL MAINTENANCE OF PRIMARY ROAD P30/1 KOPPIES TO SASOLBURG FOR A PERIOD OF 30
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CARRIED FORWARD							
				UNIT	QTY	RATE	AMT
C1.5.8			Traffic safety officer	man-month	28		
C1.5.9			Traffic safety vehicle	month	28		
C1.5.11			Provision of safety equipment for visitors				
	C1.5.11.1		Provision of reflective safety vests for visitors	(No.)	20		
	C1.5.11.2		Provision of hard hats for visitors	(No.)	20		
C1.5.12			Additional traffic accommodation facilities ordered by the Engineer:				
	C1.5.12.1		Provision of additional traffic accommodation facilities	provisional sum	Prov	Sum	R 150 000,00
	C1.5.12.2		Handling cost, profit and all other charges in respect of item C1.5.12.1	(%)	R 150 000,00		
TOTAL CARRIED FORWARD TO SUMMARY							

SPECIAL MAINTENANCE OF PRIMARY ROAD P30/1 KOPPIES TO SASOLBURG FOR A PERIOD OF 30
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BID No: CSR&T/BID16/2023/24

C1.6		KOPPIES-SASOLBURG P30/1	CLEARING AND GRUBBING			
ITEM		DESCRIPTION	UNIT	QTY	RATE	AMT
C1.6.1		Clearing				
	C1.6.1.1	Clearing with machines and some hand labour where necessary	(ha)	6		
C1.6.2		Grubbing				
	C1.6.2.1	Grubbing with machines and some hand labour where necessary	(ha)	6		
C1.6.3		Removal and grubbing of large trees and tree stumps:				
	C1.6.3.1	Girth equal to or exceeding 1,0m up to and including 2,0m	(No.)	20		
	C1.6.3.2	Girth exceeding 2,0m up to and including 3,0m	(No.)	10		
	C1.6.3.3	Girth exceeding 3,0m	(No.)	7		
TOTAL CARRIED FORWARD TO SUMMARY						

SPECIAL MAINTENANCE OF PRIMARY ROAD P30/1 KOPPIES TO SASOLBURG FOR A PERIOD OF 30 MONTHS
BID No: CSR&T/BID16/2023/24

C1.7 **KOPPIES-SASOLBURG P30/1** **LOADING AND HAULING**

ITEM		DESCRIPTION	UNIT	QTY	RATE	AMT
C1.7.1		Loading				
	C1.7.1.1	Loading from stockpile using machines and some hand labour where necessary	(m ³)	32000		
C1.7.2		Hauling				
	C1.7.2.1	Hauling material for use in the Works and off-loading it on the site of the Works:				
	(a)	Soil, gravel, crushed stone and pavement layer material	(m ³ - km)	250000		
	(b)	Boulders and hard material	(m ³ - km)	3000		
	C1.7.2.2	Hauling material to spoil and off-loading it at a designated spoil or stockpile area:				
	(a)	Cleared and grubbed material (<i>organic matter and all other unsuitable or waste material</i>)	(m ³ - km)	5000		
	(b)	Soil and gravel material	(m ³ - km)	1500		
	(c)	Boulders, hard material and concrete	(m ³ - km)	300		
TOTAL CARRIED FORWARD TO SUMMARY						

SPECIAL MAINTENANCE OF PRIMARY ROAD P30/1 KOPPIES TO SASOLBURG FOR A PERIOD OF 30 MONTHS

BID No: CSR&T/BID16/2023/24

C2.1 KOPPIES-SASOLBURG P30/1 GENERAL REQUIREMENTS AND TRENCHING FOR SERVICES

ITEM		DESCRIPTION	UNIT	QTY	RATE	AMT
C2.1.1		Location, identification, protection and relocation of existing services				
	C2.1.1.2	Permanent services relocation or protection work by others	(PC) sum	prime	cost	R 300 000,00
	C2.1.1.3	Handling costs and profit in respect of item C2.1.1.2 above	(%)	R 300 000,00		
TOTAL CARRIED FORWARD TO SUMMARY						

SPECIAL MAINTENANCE OF PRIMARY ROAD P30/1 KOPPIES TO SASOLBURG FOR A PERIOD OF 30 MONTHS

BID No: CSR&T/BID16/2023/24

C4.1		KOPPIES-SASOLBURG P30/1	BORROW MATERIALS			
ITEM		DESCRIPTION	UNIT	QTY	RATE	AMT
C4.1.2		Additional material investigations during the supplementary exploration				
	C4.1.2.1	Cost of additional trial pits and/or drilling and laboratory testing (by Engineer)	provisional sum	Prov	sum	R 200 000,00
	C4.1.2.2	Handling costs and profit in respect of item C4.1.2.1	(%)	R 200 000,00		
C4.1.4		Removing of the overburden				
	C4.1.4.1	In borrow pits	(m ³)	1500		
C4.1.5		Excavating of materials in the borrow pits and quarries, material obtained from				
	C4.1.5.1	Soft excavation	(m ³)	32000		
	C4.1.5.4	Hard excavation (other than by blasting)	(m ³)	7000		
	C4.1.5.5	Hard excavation (by blasting)	(m ³)	100		
C4.1.15		Shaping and finishing the borrow pit and quarry areas, and the stockpile sites				
	C4.1.15.2	Finishing of the borrow pit and quarry areas, and the stockpile sites using labour enhanced methods of construction:				
	(a)	Borrow pits (<i>list all borrow pits separately</i>)	hectare (ha)	7		
TOTAL CARRIED FORWARD TO SUMMARY						

SPECIAL MAINTENANCE OF PRIMARY ROAD P30/1 KOPPIES TO SASOLBURG FOR A PERIOD OF 30 MONTHS

BID No: CSR&T/BID16/2023/24

C5.3		KOPPIES-SASOLBURG P30/1	ROAD PAVEMENT LAYERS			
ITEM		DESCRIPTION	UNIT	QTY	RATE	AMT
C5.3.1		Compiling and implementing M&U plans for the construction of all the pavement layers.	number (No.)	5		
C5.3.2		Construction of pavement layers				
	C5.3.2.1	Construction of layers using conventional construction methods:				
	(h)	Gravel shoulder layer (125mm) compacted to 95% of MDD	(m ³)	22875		
	(aa)	G1 crushed stone base layer (150mm) compacted to 88 % of AD	(m ³)	69700		
C5.3.9		Construction of a trial section:				
	C5.3.9.1	Construction of a trial section using conventional methods of construction				
	(a)	Stabilised gravel layer (200mm thickness) trial section	(m ³)	40		
	(c)	Crushed stone base layer (150mm thickness) trial section	(m ³)	40		
TOTAL CARRIED FORWARD TO SUMMARY						

SPECIAL MAINTENANCE OF PRIMARY ROAD P30/1 KOPPIES TO SASOLBURG FOR A PERIOD OF 30 MONTHS

BID No: CSR&T/BID16/2023/24

C4.4

KOPPIES-SASOLBURG P30/1

COMMERCIAL MATERIALS

ITEM		DESCRIPTION	UNIT	QTY	RATE	AMT
C4.4.2		Commercial materials identified by the Contractor from commercial, private or other non-commercial suppliers				
	C4.4.2.1	Pavement layer material:				
	(a)	Type G1 material	cubic metre (m ³)	69700		
TOTAL CARRIED FORWARD TO SUMMARY						

SPECIAL MAINTENANCE OF PRIMARY ROAD P30/1 KOPPIES TO SASOLBURG FOR A PERIOD OF 30 MONTHS
BID No: CSR&T/BID16/2023/24

C5.4 KOPPIES-SASOLBURG P30/1 STABILISATION

ITEM		DESCRIPTION	UNIT	QTY	RATE	AMT
C5.4.5		Cementitious stabilisation agents for pavement layers:				
	C5.4.5.1	Addition of cementitious stabilisation agents for pavement layers				
	(a)	Cement (CEM II - 32.5N) 3%	ton (t)	3000		
	(b)	Lime	ton (t)			RATE ONLY
C5.4.8		Bituminous stabilisation agent (specify agents separately) :				
	C5.4.8.1	60% anionic emulsion	litre (ℓ)	0		RATE ONLY
	C5.4.8.2	60% cationic emulsion	litre (ℓ)	0		RATE ONLY
C5.4.12		Curing with a membrane (type of material to be specified) :				
	C5.4.12.1	Cut back bitumen	litre (ℓ)			RATE ONLY
	C5.4.12.2	Inverted bitumen emulsion	litre (ℓ)			RATE ONLY
	C5.4.12.3	Spray grade emulsion	litre (ℓ)			RATE ONLY
C5.4.14		Trial section for a chemically stabilised layer	(m ³)	40		
TOTAL CARRIED FORWARD TO SUMMARY						

SPECIAL MAINTENANCE OF PRIMARY ROAD P30/1 KOPPIES TO SASOLBURG FOR A PERIOD OF 30 MONTHS
BID No: CSR&T/BID16/2023/24

C5.5

KOPPIES-SASOLBURG P30/1

RECONSTRUCTION OF PAVEMENT LAYERS

ITEM		DESCRIPTION	UNIT	QTY	RATE	AMT
C5.5.1		Compiling and implementing M&U plans for the reconstruction of an existing road pavement	number (No.)	5		
C5.5.3		Construction equipment for sampling of in-situ material for mix design procedure	(No.)	2		
C5.5.4		Sampling of in-situ material for mix design procedure	(No.)	8		
C5.5.5		Construction of a trial section using a recycler	(m ³)	45		
C5.5.6		Construction of a trial section using conventional construction equipment	(m ³)	45		
C5.5.15		In-situ reconstruction of a pavement layer using a recycler to construct a stabilised subbase layer				
	C5.5.15.1	Chemically stabilised subbase layer compacted to 97% of MDD:				
	(b)	Using cemented material compacted to 200 mm thick	(m ³)	92 802		
C5.5.20		Material shortfall or make-up material				
	C5.5.20.2	For subbase layer	(m ³)	1000		
TOTAL CARRIED FORWARD TO SUMMARY						

SPECIAL MAINTENANCE OF PRIMARY ROAD P30/1 KOPPIES TO SASOLBURG FOR A PERIOD OF 30
MONTHS
BID No: CSR&T/BID16/2023/24

C8.1 KOPPIES-SASOLBURG P30/1 PRIME COAT

ITEM		DESCRIPTION	UNIT	QTY	RATE	AMT
C8.1.1		Prime coat:				
	C8.1.1.1	MC -10 cut-back bitumen	litre (ℓ)			RATE ONLY
	C8.1.1.2	MC -30 cut-back bitumen	litre (ℓ)			RATE ONLY
	C8.1.1.3	Inverted bitumen emulsion	litre (ℓ)	371265		
C8.1.2		Aggregate for blinding:				
	C8.1.2.1	Natural sand	(m ³)	100		
	C8.1.2.2	Crusher sand	(m ³)	100		
C8.1.3		Extra over item C8.1.1 for applying the prime coat accessible only to hand-held or light equipment	litre (ℓ)	1000		
TOTAL CARRIED FORWARD TO SUMMARY						

SPECIAL MAINTENANCE OF PRIMARY ROAD P30/1 KOPPIES TO SASOLBURG FOR A PERIOD OF 30 MONTHS

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C8.2

KOPPIES-SASOLBURG P30/1

COVER SPRAYS, FOG SPRAYS AND REJUVENATION SPRAYS

ITEM		DESCRIPTION	UNIT	QTY	RATE	AMT
C8.2. 1		Cover sprays, fog sprays and rejuvenation sprays				
	C8.2.1. 2	60% Anionic stable grade emulsion				
	(a)	Indicate dilution (Diluted 50% Emulsion/50% Water)	litre (ℓ)	190000		
TOTAL CARRIED FORWARD TO SUMMARY						

SPECIAL MAINTENANCE OF PRIMARY ROAD P30/1 KOPPIES TO SASOLBURG FOR A PERIOD OF 30 MONTHS

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C8.3 KOPPIES-SASOLBURG P30/1 TEXTURE TREATMENT

ITEM		DESCRIPTION	UNIT	QTY	RATE	AMT
C8.3.1		Texture treatment				
	C8.3.1.1	Application of slurry for texture improvement, applied by hand	(m ³)	120		
	C8.3.1.2	Application of slurry for texture improvement, applied by spreader box <i>(indicate aggregate grade,</i>	(m ³)	120		
TOTAL CARRIED FORWARD TO SUMMARY						

SPECIAL MAINTENANCE OF PRIMARY ROAD P30/1 KOPPIES TO SASOLBURG FOR A PERIOD OF 30 MONTHS

BID No: CSR&T/BID16/2023/24

C10.1

KOPPIES-SASOLBURG P30/1

GENERAL REQUIREMENTS FOR SURFACE TREATMENTS

ITEM		DESCRIPTION	UNIT	QTY	RATE	AMT
C10.1.3		Multiple stone seals including a cover spray, if specified using:				
	C10.1.3.1	20mm and 10mm aggregate (<i>grade 1 using hot applied type SE-1homogeneous modified binder and a 60% cationic spray-grade emulsion, diluted with 50% water& fogspray as a final binder</i>)	(m ²)	470000		
C10.1.4		Embargo period effects				
	C10.1.4.1	Re-establishment of sealing team after embargo period	lump sum	1		
	C10.1.4.2	Extra-over for sealing during the specified embargo period (<i>state seal type, binder for each layer</i>)	(m ²)	5000		
C10.1.9		Bituminous binder variations:				
	C10.1.9.2	60% Stable-grade emulsion	litre (ℓ)	2000		
C10.1.10		Aggregate variation :				
	C10.1.10.3	10mm aggregate	(m ³)	40		
	C10.1.10.5	20mm aggregate	(m ³)	100		
C10.1.14		Precoating of aggregate using a frontend loader				
	C10.1.14.1	Product containing low flashpoint solvent (<i>indicate precoating fluid</i>)	litre (ℓ)	3000		
C10.1.15		Precoating of aggregate by hand				
	C10.1.15.1	Product containing low flashpoint solvent	litre (ℓ)	3000		
TOTAL CARRIED FORWARD TO SUMMARY						

SPECIAL MAINTENANCE OF PRIMARY ROAD P30/1 KOPPIES TO SASOLBURG FOR A PERIOD OF 30 MONTHS
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C11.9		KOPPIES-SASOLBURG P30/1		FINISHING THE ROAD AND ROAD RESERVE AND TREATING OLD ROADS		
ITEM		DESCRIPTION	UNIT	QTY	RATE	AMT
C11.9.1		Finishing the road and road reserve:				
	C11.9.1.2	Single carriageway road	(km)	120		
TOTAL CARRIED FORWARD TO SUMMARY						

SPECIAL MAINTENANCE OF PRIMARY ROAD P30/1 KOPPIES TO SASOLBURG FOR A PERIOD OF 30 MONTHS

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SECTION D - D1000 KOPPIES-SASOLBURG P30/1			TRAINING, COACHING, GUIDANCE, MENTORING AND ASSISTANCE			
ITEM		DESCRIPTION	UNIT	QTY	RATE	AMT
D10.02		Stakeholder and Community Liaison and Social Facilitation				
	(a)	Cost of liaison officer (CLO), ,social facilitation and PLC support	(PC) sum	Prime	Cost	R 330 000,00
	(b)	Handling cost and profit in respect of sub-item D10.02(a)	(%)	R 330 000,00		
D10.06		Training, coaching, guidance, mentoring and assistance				
	(a)	Training Costs				
	(i)	Accredited NQF training	provisional sum	Prov	Sum	R 200 000,00
	(ii)	Accredited generic skills training	provisional sum	Prov	Sum	R 100 000,00
	(iii)	Community skills training	provisional sum	Prov	Sum	R 75 000,00
	(iv)	Handling cost and profit in respect of subitems D10.06(a)(i), (ii) and (iii)	percentage (%)	R 375 000,00		
	(b)	Student experiential training				
	(ii)	Provision of experiential training	Person.Month	30		
	(d)	Training venue	lump sum	1		
D10.07	(i)	Portion of the works identified to be completed by nominated subcontractors	provisional sum	1		
	(ii)	Contractor's handling cost and profit in respect of sub-item D10.07(i) allowed for the main contractor's interaction with nominated subcontractors as well as facilitation of monthly payment to the nominated subcontractor for works completed under this pay item.	(%)	R -		
TOTAL CARRIED FORWARD TO SUMMARY						

SPECIAL MAINTENANCE OF PRIMARY ROAD P30/1 KOPPIES TO SASOLBURG FOR A PERIOD OF 30 MONTHS
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FOR		
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C10.1	GENERAL REQUIREMENTS FOR SURFACE TREATMENTS	
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C11.9	FINISHING THE ROAD AND ROAD RESERVE AND TREATING OLD ROADS	
SECTION D: STAKEHOLDER AND COMMUNITY LIAISON, AND TARGET LABOUR AND TARGETED ENTERPRISES UTILISATION AND DEVELOPMENT		
D1010	TRAINING, COACHING, GUIDANCE, MENTORING AND ASSISTANCE	
	SUBTOTAL A	
	CPA (5%)	
	CONTINGENCIES (3%)	
	VALUE ADDED TAX:	
	15% of Subtotal	
	TOTAL CARRIED TO : FORM OF OFFER	

SIGNED BY TENDERER: _____

PART C3 SCOPE OF WORKS

PART C3: SCOPE OF WORK

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SPECIAL MAINTENANCE OF PRIMARY ROAD P30/1 KOPPIES TO SASOLBURG FOR A PERIOD OF 30 MONTHS.

BID No: CR&T/BID16/2023/24

PART C3 SCOPE OF WORKS

SECTION C3.1 STANDARD SPECIFICATIONS

COTO Standard Specifications for Road and Bridge Works for South African Road Authorities(2020 Edition)

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

SANS 1914-1 to 6 (2002): Targeted Construction Procurement

SANS 1921-1 (2004): Construction and Management Requirements for Works Contracts Part 1 :General Engineering and Construction Works and where accommodation of traffic is involved.

SANS 1921-2 (2004): Construction and Management Requirements for Works Contracts; and Part 2 : Accommodation of Traffic on Public Roads Occupied by the Contractor.

All references to SABS Standards which are replaced with corresponding SANS Specifications, have to be read in their new format.

SECTION C3.2 : PROJECT SPECIFICATIONS

The Project Specifications, consisting of two parts, form an integral part of the Contract and supplements the Standard Specifications.

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

PART B contains variations, amendments and additions to the Standard Specifications and, if applicable, the Particular Specifications.

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

SPECIAL MAINTENANCE OF PRIMARY ROAD P30/1 KOPPIES TO SASOLBURG FOR A PERIOD OF 30 MONTHS.

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PART A : GENERAL

PS1 EMPLOYER'S OBJECTIVES

The Employer's general objective is to repair Primary Road P30/1 to a safe standard for public use.

The project offers employment opportunities and upliftment of the local community.

This project has the following particular objectives:

- To improve road safety
- Create as many job opportunities for local people as economically feasible
- Create employment opportunities for local small contractors
- To provide training for local labour in social as well as in labour intensive construction skills.
-

PS2 LOCATION OF THE WORKS

Refer to the locality plan included in Part C4 of this document.

Koppies - Sasolburg road P30/1 is classified as a primary road based in Ngwathe district . **(P30/1)**, the R82 crosses into the [Ngwathe Local Municipality](#) and continues south-west for 58 kilometres, intersecting with the [R723 route](#) (co-signed for 2.7 kilometers), bypassing the town of [Koppies \(P30/1\)](#), to reach an intersection with the [R720 route](#) and to end at an intersection with the [R34 route](#) north-east of [Kroonstad](#) (2 kilometres east of the R34's interchange with the [N1 Highway](#)) in the [Moghaka Local Municipality](#). The road it serves as a major alternative route .The road was recently assessed and laboratory tests conducted. It is in a very poor condition, barely driveable, and now for years the Department has been receiving complaints from the community about its poor condition.

Position	South	East
Start km 0.0		
End km 61		

Refer to PART C4 for the Site Locality Plan.

For the purposes to this tender we are concentrating on the upgrade of km 0.00 – km 61.00. from Koppies to Sasolburg.

PS3 EXTENT OF THE WORKS

This section of the Project Document is a basic outline of the works, and does not limit the work to be carried out under this contract.

The works required under this contract consist of the following activities:

- Establishment on site
- Accommodation of traffic

The road will be constructed in half-widths in the fills and full-widths on flat terrain. The traffic will be accommodated on the existing road reserve where possible. The use of robot closures is permitted and may be utilized to maximize labour on the project.

- **Construction of pavement layers (P30/1)**

1. **SURFACING:**

- a) Double Seals: Certain sections of the P30/1 Road will be resurfaced utilizing a 20,0/10,0 double seal.

2. **BASE LAYER:**

- a) In general, the existing alignment will be lifted to allow for a new G1 Base with only minor adjustments to the vertical and horizontal alignment.

3. **SUBBASE LAYER:**

- a) The subbase will be constructed by spreading 50 mm of G5 quality material onto the existing road followed by recycling to a depth of 100 mm. The layer will be stabilised using cement to produce 200 mm subbase of C3 quality.

- b) **FILL LAYER:**

- a) Auxiliary lanes: Fill will be constructed from a solid in-situ foundation up to the bottom of the Road bed layer.

- Clearing and grubbing the road reserve
- Clearing out of existing hydraulic structures
- Repair or construction of concrete-lined storm water channels
- Installation of kerbing and channeling
- Minor road structure/surface repairs
- Construction of erosion protection (gabions/stone pitching)
- Erection/repair of guardrails
- Erection/repair of fencing
- Extending concrete culverts and construction of inlet/outlet structures
- Erection/repair of road signs
- Road markings
- Finishing off road reserve

Where required, material from local Departmental borrow pits will be required to reconstruct road layers and eroded shoulders. In addition, all excess material from finishing operations shall be disposed of at approved spoil sites. Special attention must be given to the finishing off of existing borrow pits used for construction.

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PS4 NATURE OF GROUND AND SUBSOIL CONDITIONS

Ground and subsoil conditions will be evaluated during the construction phase.

Existing publication:

The new COTO Standard Specifications for Road and Bridge Works for South African Road Authorities was approved by COTO on 18 August 2020 as a Draft Standard (DS) and will be replacing the COLTO Standard Specifications for Road and Bridge Works for State Road Authorities (1998 Edition).

Existing contracts and tenders in the design phases based on the COLTO Standard Specifications (1998 Edition) will remain unaffected but will be phased out during the next 6 months and the COTO Standard Specifications (2020 Edition) will be mandatory for use in procurement documents advertised as from 1 March 2021.

A1.2 GENERAL REQUIREMENTS AND PROVISIONS

PART A: SPECIFICATIONS

b) A1.2.1 SCOPE

This Section covers matters which relate to this Standard Specification and/or the Contract Documentation as a whole. It establishes generic requirements that may also be applicable to other sections of this Standard Specification to avoid repetition in the other sections.

It includes payment items for general items that are not included elsewhere in this Chapter 1 or in the other Chapters and for dayworks that are applicable to all the Chapters.

c) A1.2.2 DEFINITIONS

Acceptance Quality Control - encompasses those actions carried out by the Employer and/or the Engineer to inspect, sample, test and measure each constructed part or section of the Works to determine whether the quality and workmanship is acceptable in terms of the Specifications.

Process Quality Control -encompasses those actions carried out by the Contractor to assess and control materials and construction processes to ensure that the quality of the final product/s meets all the specified requirements. It includes a quality plan with defined actions, inspections, sampling, testing and measurement for each construction process to ensure that the quality control process is carried out effectively.

Stakeholder liaison - the process whereby the Employer and the Contractor engage with interested and affected parties, in particular the local authorities, local residents, schools etc., in order to inform them how the Works will affect the local community, to discuss how any adverse effects of the Works on the local community and/or environment can be eliminated or alleviated and to provide any health and safety information that is relevant to the local community regarding construction of the Works.

d) A1.2.3 GENERAL

The following Clauses include specifications for various general items which are not included in any of the other specific Chapters and Sections.

(1) A1.2.3.1 Contractor's activities in respect of property outside the road reserve provided by the Employer

The Contractor may occupy and make use of property outside the road reserve that is provided by the Employer for purposes of executing the contract, on condition that:

- The Contractor complies strictly with the requirements of such statutory provisions, particularly with respect to the matters relating to serving written notice to the owner before the Contractor enters the property.
- The Contractor shall provide the Engineer with a copy of the written notice and inform the Engineer of any further consultations that may have taken place, or additional agreements reached, with the property owner.
- The Contractor adheres to all the written agreements made by the Employer with owners of the property outside the road reserve in respect of the following matters:

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- The location, extent and use of borrow pits, haul roads, construction roads and bypasses outside the road reserve,
- any compensation paid by the Employer or the Contractor, if applicable, for land or materials taken or for land temporarily used or occupied,
- the reinstatement of property occupied, used, damaged or destroyed, or compensation therefor in lieu of reinstatement,
- the procedures for the moving of fencing, services and any other items and
- any similar matter directly related to the Contractor's activities on the property.

The Contractor shall comply with all the environmental requirements and all other current legislation and regulations which are applicable to the land outside the road reserve which is being used by the Contractor for carrying out the Works.

On completion of his operations the Contractor shall obtain from the owner concerned a written statement to the effect that:

- The Contractor has fulfilled his obligations under any written agreement that the Employer has made with the owner.
- The owner is satisfied that all property occupied, including borrow pits, haul roads and construction roads, has been properly restored and is in a satisfactory condition.
- With respect to fences, services or any other items moved, altered, damaged or affected in any way the owner is satisfied that everything has been handed back to him by the Contractor in a satisfactory condition.

All such statements shall be signed and dated and copies shall be delivered to the Engineer. The obtaining of any such written statements will not relieve the Contractor of the execution of any of his obligations to the satisfaction of the Employer or the owner or authority concerned.

(2) A1.2.3.2 Contractor's activities in respect of property which is not provided by the Employer

Should the Contractor use property which is not provided by the Employer, for haul roads, site offices and workshops, the Engineer's offices and laboratory, or for storing of equipment or materials required for construction or disposal, it shall be subject to the following:

- The Engineer shall agree to the use of any property selected for this purpose.
- Such property shall be physically separated from any production plant or activities and suitably fenced in.
- The area used for the aforesaid purpose shall be surveyed, and, where the land does not belong to the Contractor, he shall sign a lease agreement with the owner of such property in respect of the full period for which such property shall be used for such purpose. The lease agreement shall stipulate that the property owner shall not have any right whatsoever to any material stockpiled on such property during the duration of the contractual lease agreement.
- A lease agreement shall be concluded by the Contractor with the owner or owners of such property for the full period that such property is required. The lease agreement shall provide for possible extensions to match the duration of the contract. The lease agreements shall also provide for the contract being terminated by Contractor's default or liquidation and the resulting possibility for the lease agreement to be taken over by a succeeding Contractor.
- Copies of all lease agreements shall be submitted to the Engineer for comment prior to signature by the signing parties and copies of the final signed agreements shall lodged with the Engineer. Notwithstanding the Engineer's comments on the conditions of a lease the Contractor shall be solely responsible for adhesion to the terms of the lease agreements.
- Suitable permanent reference beacons shall be placed next to any material storage area, at the cost of the Contractor, to demarcate the storage area and, if applicable, for use by the Engineer for taking cross-sections for determining quantities.
- Only material that is to be used for the Works shall be stored on such property.

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- The Contractor shall comply with all the requirements of the environmental and any other legislation which is applicable to the property being used.

On completion of his operations, the Contractor shall obtain, from the owner concerned, a written statement to the effect that:

- The Contractor has fulfilled his obligations under any written agreement that he made with the owner.
- The owner has received all the compensation he is entitled to and is also satisfied that all property that was occupied, including borrow pits, haul roads and construction roads, has been properly restored and handed over to the owner in a satisfactory condition.
- With respect to fences, services or any other items moved, altered, damaged or affected in any way the owner is satisfied that everything that was affected has been handed back to him by the Contractor in a satisfactory condition.

All such statements shall be signed and dated and copies shall be delivered to the Engineer. The obtaining of any such written statements will not relieve the Contractor of the execution of any of his obligations to the satisfaction of the Employer or the owner or authority concerned.

(3) A1.2.3.3 Environmental management

The Contractor shall ensure that the project complies with all the requirements that have been set out in the Environmental Authorisation (EA), the Environmental Management Plan (EMP), the Water Use Licenses (WUL) for the extraction of water as well as for working within a certain distance of watercourses and their associated specific conditions and permits.

Before any construction may commence the Contractor shall ensure that he has a copy of all licenses and permits required in terms of the EA, the EMP and for the WULs that were obtained by the Employer prior to the Contract being awarded. The Contractor shall also ensure that he obtains all other outstanding permits required to comply with the requirements of the EA, the EMP and the WULs, in particular the WUL for the extraction of the amount of water he requires from rivers and streams. The Contractor shall supply a copy of all required licenses and permits to the Engineer for his records.

(4) A1.2.3.4 Extension of time for delays caused by rainfall

This Clause specifies the conditions under which extensions of time for rainfall delays will be measured. Any delays caused by rainfall shall be determined in terms of one of the three methods given below. The applicable method for a particular contract shall be specified in the Contract Documentation. The rainfall delay determined by using the specified method shall entitle the Contractor to an equivalent extension of the time for completion without the need for formal claim procedures. (If none of the methods given below are specified in the Contract Documentation then any claims for rainfall related extensions of time will be dealt with according to the applicable Conditions of Contract.)

Any other delays caused by exceptionally adverse weather conditions that have not already been taken into account as specified above shall be dealt with in accordance with the applicable Conditions of Contract.

The Contractor shall take cognisance of all the temperature, wind speed, moisture content and curing related limitations and/or restrictions that are applicable to some items of the Works as specified in the relevant clauses of this Standard Specification. No extensions of time will be measured or granted for any delays caused by the Contractor's compliance with these limitations and/or restrictions. **a) Method 1 (Rainfall formula)**

If specified in the Contract Documentation the formula below shall be used to calculate separately the delay for each calendar month or part thereof due to rainfall. It shall be calculated each month during the period referred to in the Conditions of Contract as the time for completion of the Works (including any extension thereof that may have been granted), or until the issue date of the Taking-over Certificate, whichever is the shorter period. The delay calculated for a given month shall be used to determine the interim extension of time granted for that month. At the end of the applicable period referred to above, the aggregate of the monthly delays will be taken into account for the final determination of the total extension of time for the Contract. Such determination will not be subject to normal claim procedures.

$$V = (N_w - N_n) + [(R_w - R_n) \times X]$$

If any value of V is negative and its absolute value exceeds N_n, then V shall be taken as equal to minus N_n.

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The delay for a part of a month shall be calculated by substituting pro rata values for the variables in the equation. The symbols in the above rainfall formula shall have the following meanings:

V = Delay due to rain in calendar days in respect of the calendar month under consideration.
Nw = Actual number of days during the calendar month on which a rainfall of Y mm or more per day has been recorded.
Rw = Actual rainfall in mm for the calendar month under consideration.
Nn = Average number of days in the relevant calendar month, as derived from existing rainfall records provided in the Contract Documentation, on which a rainfall of Y mm or more per day has been recorded.
Rn = Average total rainfall in mm for the calendar month, as derived from existing rainfall records supplied in the Contract Documentation.
X = 20, unless specified otherwise in the Contract Documentation.
Y = 10, unless specified otherwise in the Contract Documentation.

(5) A1.2.3.5 Handing-over of the Site of the Works

The Site of the Works will be handed over to the Contractor for construction purposes, subject to such conditions as may be specified in the Contract Documentation regarding matters such as:

- The sequence in which sections of the Works will be handed over and must be completed.
- The maximum total length of temporary deviations that will be allowed to be in operation at any time.
- The number of half or partial width construction sections that will be permitted on the Site of the Works at any one time.
- The minimum length of existing or newly completed full width, unrestricted road sections that must be open to traffic between any half or partial width construction sections.
- Any other matters relating to the Contractor's use and occupation of the road reserve.

(6) A1.2.3.6 Health and safety

The Contractor shall always comply with the requirements of the health and safety plan, drawn up by the Contractor in compliance with all current and applicable health and safety legislation, the Employer's health and safety specification and the Contractor's own health and safety requirements to ensure that the Contractor complies fully with all current legislation and regulations as well as with any additional health and safety requirements that may be specified in the Contract Documentation. The Contractor's health and safety plan shall be developed to address all risks specific to the Works as identified in risk assessments carried out by the Contractor and/or by the Employer.

The Employer and /or his construction health and safety agent may also monitor the Contractor's compliance with the requirements stipulated in the Employer's health and safety specification as well as the requirements set out in the Contractor's health and safety plan.

(7) A1.2.3.7 Legal and contractual requirements and responsibility to the public and the Employer

The Contractor shall comply with all the legislative and regulatory requirements of all the relevant statutory bodies pertaining to his site establishment and to the execution of the Works. The Contractor shall also comply with the requirements given in the Contract Documentation and with his legal and general obligations to the public, particularly with regard to obtaining and maintaining all the insurances and sureties required for the duration of the Contract and the Defects Notification Period.

(8) A1.2.3.8 Tolerances

The work specified in all the chapters of this Standard Specification shall comply with the various dimensional and other tolerances specified in each case. No representation is made that the full specified tolerances will be available independently of each other, and the Contractor is cautioned that the liberal or full use of any one or more tolerances may deprive him of the full or any use of tolerances relating to other aspects of the work. The latter would apply particularly in respect of level tolerances on layer work and the related requirements regarding layer thicknesses.

Where no tolerances are specified, the standard of workmanship shall be in accordance with normal good practice.

(9)

(10)

A1.2.3.9 Monthly reports

The Contractor shall prepare monthly reports on progress, delays incurred, plant returns, OHS and EMP compliance, staff training, empowerment, capacity building, small Contractor development, labour and staff returns and any other information required by the Employer and/or the Engineer which is specified in the Contract Documentation.

The Contractor's monthly reports shall be submitted to the Engineer at least two working days prior to the applicable scheduled monthly site meetings.

(11)

A1.2.3.10 Notices, signs and advertisements

The Contractor shall not erect any signs, notices or advertisements on the Works or the site of the Works without the written approval of the Engineer.

Details of the official contract sign boards (if any) that should be erected will be given in the Contract Documentation or issued by the Engineer. These signs are to be erected in positions determined by the Engineer not later than one month after the Contractor has been given access to the site. They shall be maintained in a clean and legible condition throughout the contract and removed immediately upon completion of the Works.

No signboards other than those specified above will be permitted on or adjacent to the Works, except that the Contractor may permit each of his subcontractors to display one signboard, and one only, of less than 2 m² at the Works office. All advertisements, notices and temporary signs shall be removed by the Contractor immediately upon completion of the Works.

(12)

A1.2.3.11 Ordering of daywork

Daywork shall be undertaken strictly in accordance with the provisions of the Conditions of Contract. No daywork shall be undertaken unless specified by the Engineer. Such a written instruction shall include a full description of the work to be carried out. Before commencing any daywork the Contractor shall obtain the Engineer's agreement regarding the estimated duration of the dayworks, the numbers of each category of staff to be employed, the materials to be used and the construction equipment and vehicles that will be required to carry out the work.

The Contractor shall provide the Engineer with a daily report that records the actual duration, numbers of staff and materials, equipment and vehicles used each day for approval of the dayworks.

(13)

A1.2.3.12 Ownership of assets and disposal of non-useable assets

Unless otherwise stated in the Contract Documentation the Employer is the owner of all existing moveable and immoveable assets in the road reserve.

Non-useable assets are assets that have reached the end of their economic life, are no longer needed or need to be replaced. A disposal plan for these non-useable assets will be given in the Contract Documentation. The Contractor shall submit rates for the disposal of each of the identified non-useable assets listed in the Contract Documentation. The tendered rates could be positive or negative depending on the cost of disposing of them against the value that the Contractor may wish to place upon them.

A provisional sum may also be provided to cover the cost of the disposal of any non-useable assets that may be identified during the construction of the Works. A record must be kept of all such non-useable assets that are disposed of. Any income derived from the sale of these assets will be offset against the provisional sum.

(14)

A1.2.3.14 Remedial work

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The Contractor shall replace, repair or make good any part of the Works or any equipment or material that is found not to conform to the specified requirements, or is damaged so that it no longer conforms to the specified requirements, in accordance with the Conditions of Contract before the Taking-over Certificate will be issued.

(15) A1.2.3.16 Site meetings

The Contractor shall attend regular (at least monthly) meetings on the site with the Employer and the Engineer, at dates and times to be determined by the Employer and/or the Engineer. Such meetings will be held for evaluating the progress of the Works, compliance with the environmental management and the health and safety regulations and for discussing matters pertaining to the contract which any of the parties represented may wish to raise. To this effect the Contractor will be obliged to compile a formal monthly report, drafted in consultation with the Engineer where necessary, and to submit these monthly reports to the Engineer at least two working days before each site meeting.

(16) A1.2.3.17 Site security

The Contractor is responsible for keeping unauthorised persons off the Site of the Works in accordance with the requirements of the Conditions of Contract. The Contractor shall therefore carefully assess the security measures of whatever nature that may be required at the location of the Engineer's site office and laboratory, the Contractor's offices, stores and workshops, the Site of the Works including quarries, borrow pits, stockpile sites and manufacturing yards as well as any traffic accommodation site facilities and equipment which may be placed on the approaches to / exits from the Site of the Works.

(17) A1.2.3.18 Stakeholder liaison

The initial stakeholder liaison required will normally be undertaken by the Employer and/or the Engineer. The outcomes and agreements resulting from all such stakeholder liaison will be taken into account and included in the Contract Documentation. This process may involve the establishment of a Project Liaison Committee (PLC) and the employment of a Project Liaison Officer (PLO) by the Employer.

(18) A1.2.3.19 Temporary drainage and dewatering

The Contractor shall be responsible for the provision of temporary drainage works such as drains, open channels, banks etc., and for providing and operating temporary pumps and such other equipment as may be necessary for adequately protecting, draining and dewatering the Works and any temporary Works, deviations and detours on existing roads if required.

The Contractor shall ensure that any temporary drainage works and/or dewatering operations do not cause erosion or flooding of other parts of the Works or adversely affect the stability of any excavated trenches or slopes. If the Contractor becomes aware of any potential signs of slope / trench instability he shall immediately suspend the work and withdraw all personnel from the area and fence and/or barricade it to prevent access. The Contractor, who remains responsible for compliance with the OHS regulations, shall then propose, design and implement all measures required to rectify the situation.

Unless specifically reflected in the pricing schedule, all such measures shall be deemed to be included in the rates for the Works.

(19) A1.2.3.20 Road safety audits

If stated in the Contract Documentation, two types of road safety audits shall be carried out on the Contract, namely a work zone traffic management audit before any construction work commences and a pre-opening stage road safety audit when the construction work is almost complete.

(20) A1.2.3.21 Water

The Contractor shall make his own arrangements for procuring, transporting, storing, distributing and applying the water needed for construction and other purposes, except where otherwise specified.

Obtaining water from streams, rivers, dams or boreholes shall be subject to the Contractor obtaining the required permit from the relevant authority.

Obtaining water from a municipal or other water supply authority shall be subject to the Contractor entering into a supply agreement with the relevant supply authority.

The suitability of water for construction purposes shall be determined in accordance with the acceptance parameters given in the following clauses of this Standard Specification:

- Water for earthworks and pavement layers
- Water for stabilisation of pavement layers –
- Water for diluting bitumen emulsion –
- Water for grout
- Water for shotcrete
- Water for concrete structures
- Water for cementitious repair mortar or concrete
- Water for sprayed concrete

e) A1.2.7 EXECUTION OF THE WORKS

(1) A1.2.7.1 Programme of work

a) General

This Clause describes the requirements for the preparation, submittal, update and revision of the Contractor's programme. These requirements are in addition to, or expand upon, the requirements for programming the Works which are given in the Conditions of Contract or elsewhere in the Contract Documentation.

The Contractor's programme shall be used by the Contractor to plan and execute the Works. The programme will also be used by the Engineer to monitor progress and it may be used as the basis for the assessment of extensions of time and the effect of any delays on the progress of the Works.

The Contractor's original baseline programme shall be reviewed and updated monthly, or as required in the Contract Documentation, to ensure that the programme always reflects the actual progress of the Works.

Scheduling of work and monitoring of progress can be done to various degrees. Extensive scheduling has its benefits in controlling progress and in the evaluation of delay claims, but the amount of effort involved in this can be considerable and may not be required on all contracts, especially on relatively small Works. This specification makes provision for two schemes: Scheme 1 where the programme may be kept relatively simple, and Scheme 2 with more extensive requirements for complex or high value projects.

Whether a Scheme 1 or Scheme 2 programme is required will be indicated in the Contract Documentation. Scheme 1 will apply if nothing is indicated in the Contract Documentation. If only a Scheme 1 programme is indicated the Contractor shall still be able to incorporate some or all the requirements applicable to Scheme 2 in the programme if he so wishes.

(2) A1.2.7.2 Setting out of the Works and the protection of beacons

The Contractor shall check the condition of all reference and level beacons provided and shall satisfy himself that they have not been displaced and that they are all correct with respect to both their position and level. If beacons have been destroyed, displaced or damaged before the site is handed over to the Contractor, the Engineer will arrange to have new beacons installed, unless such beacons are declared non-essential. A beacon which has been displaced shall not be used unless its true position and level have been re-established and the new values verified by the Engineer.

(3) A1.2.7.3 Services

The specifications relating to the location, identification, protection of and/or moving and reinstating of existing services that may be affected by the construction of the Works are given in Clause A2.1.3.2 b), c) & d) of Chapter 2

BC 1.2.11 Laboratory Tests for Engineer's Quality Assurance/Acceptance control

This Item serves as a special Item for Engineer's (Employer) Quality Assurance/Acceptance control

BC 1.2.12 Site Survey for Engineer's Quality Assurance/Acceptance control

This Item serves as a special Item for Engineer's (Employer) Quality Assurance/Acceptance control

BC 1.2.13 Occupational Health & Safety for Engineer's Quality Assurance/Acceptance control

This Item serves as a special Item for Engineer's (Employer) Quality Assurance/Acceptance control

BC 1.2.14 Environmental Compliance Agent for Engineer's Quality Assurance/Acceptance control

This Item serves as a special Item for Engineer's (Employer) Quality Assurance/Acceptance control

A1.3 CONTRACTOR'S SITE ESTABLISHMENT AND GENERAL OBLIGATIONS

PART A: SPECIFICATIONS

f) A1.3.1 SCOPE

This Section covers the establishment of the Contractor's organization, construction camps and constructional plant and their removal on completion of the contract.

It also includes payment items to cover certain general obligations, risks and liabilities and general items of cost that are included in, but not covered directly by the payment items in the other chapters.

g) A1.3.3 GENERAL

(1) A1.3.3.1 Construction camps

The Contractor shall establish the construction camps either at the specific sites and borrow areas identified in the Contract Documentation or at locations chosen by the Contractor. The exact location of these facilities shall be subject to the approval of the Engineer and such approval will not be unreasonably withheld.

The Contractor shall make his own arrangements for the use of any property outside the road reserve for erection of the construction camp/s, as well as for the provision of adequate means of access, security and the installation and supply of water, electricity and telephone services required by the Contractor.

Before commencing with the construction of any camps the Contractor shall comply with all the requirements specified in Clauses A1.2.3.2 and/or A1.2.3.3.

If Employer-owned land can be made available for the use of the Contractor for the construction camps, the use of such land will not be treated as a lease but will form part of the contract. In this regard the Contractor shall complete the prescribed agreement and comply with all the conditions thereof as if it is part of the Contract. The availability of any Employer owned land will be indicated in the Contract Documentation.

On completion of the Works, all constructional plant, buildings, fencing and other temporary structures erected by the Contractor shall be removed and the construction camp site shall be restored to its original condition and left neat and tidy. The Contractor shall also comply with all the requirements related to the completion of the operations specified in Clause A1.2.3.2 and/or Clause A1.2.3.3.

(2) A1.3.3.2 Housing

The Contractor shall not erect any housing or other accommodation facilities on the site in urban areas and shall make all the necessary arrangements for accommodation of his personnel and site staff off the site, unless otherwise stated in the Contract Documentation.

The Contractor shall not erect any housing or other accommodation facilities on the site before he has obtained the written permission of the Employer and, where applicable, the land owner and has complied fully with all applicable legislative and regulatory requirements.

(3) A1.3.3.3 Maintenance of the Contractor's facilities

The Contractor shall maintain the construction camps and all the Contractor's other facilities in a clean, neat and tidy condition for the duration of the Contract. The Contractor shall also maintain all the access roads to the Contractor's site facilities including any publicly or privately owned roads that the Contractor is making use of. Depending on the initial condition of the access roads this may entail repairing any potholes and edge breaks of surfaced roads or the re-gravelling of the road and subsequently the regular watering, blading and rolling of the surface to maintain a firm surface without excessive corrugations and loose materials. The Contractor shall ensure that the access roads to the Contractor's facilities are always in a safe and passable condition for normal cars under all weather conditions.

(4) A1.3.3.4 Contractor's own security arrangements

The Contractor shall provide all the security measures required for the Contractor's own facilities and equipment on the Site of the Works, including quarries, borrow pits, and for the traffic accommodation site facilities and equipment, as he deems necessary. The provision of security measures for the duration of the Works shall be included in the Contractor's General Obligations as defined in Clause A1.3.2.

h) A1.3.8 WORKMANSHIP

The Contractor shall control the quality of materials and workmanship used for the construction and fitting out of the construction camps to ensure that the applicable legislative and regulatory requirements related to building standards and to health and safety are adhered to.

**C1.3 CONTRACTOR'S SITE ESTABLISHMENT AND GENERAL OBLIGATIONS
PART C: MEASUREMENT AND PAYMENT**

(i) Preamble

The tendered rate for each item shall include full compensation for providing, operating, maintaining and decommissioning upon completion, of all the construction equipment, labour, tools, incidentals and supervision to carry out the activity or construct the works in the item, unless otherwise stated.

Any prime cost or provisional sums shall be paid in accordance with the provisions of the Conditions of Contract. The charge or mark-up tendered or allowed for is a percentage of the amount actually paid under the prime cost or provisional sum. This percentage shall cover all the Contractor's handling, supervision, profit and liability costs to provide the services in the prime cost or provisional sum item. **(ii) Items that will not be measured separately**
There are no activities mentioned in this section that are not measured in this Section.

(iii) Items to be measured and paid for using items specified elsewhere in the specifications

There are no payment related items mentioned in this Section that are measured in other Sections of the specifications. **(iv) Items specifically for this Section of the specifications**

Item	Description	Unit
C1.3.1	The Contractor's general obligations	
C1.3.1.1	Fixed obligations	lump sum
C1.3.1.2	Value-related obligations	lump sum
C1.3.1.3	Time-related obligations	month

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The lump sums under items C1.3.1.1 and C1.3.1.2 and the contract rate per month for item C1.3.1.3 shall together include full compensation for all the Contractor's costs, charges, overheads and profits in respect of all the Contractor's General Obligations as specified in Clause A1.3.2.

The unit of measurement for item C1.3.1.1 is the lump sum. The lump sum shall include full compensation for the fixed part of the Contractor's general obligations, i.e. that part which is substantially fixed and is not a function of the value of the Works or of the time required for the completion of the Contract.

Payment of this lump sum will be made in three instalments, as follows:

- The first instalment, 50 % of the lump sum, will be paid after the Contractor has completed the establishment of the construction camps, site offices, laboratories and housing, has provided the personnel, staff and equipment required to commence the Works in accordance with all the specified requirements and has made a substantial start with construction of the Works in accordance with the approved programme.
- The second instalment, 35 % of the lump sum, will be paid when the value of the Work done reaches one half of the Contract Amount, excluding contingencies and price adjustments in terms of the Contract Documentation.
- The third and final instalment, 15 % of the lump sum, will be paid when the Works have been completed and taken over by the Employer.

FACILITIES FOR THE ENGINEER

i) A1.4.1 SCOPE

This Section covers the provision by the Contractor of facilities for the Engineer and the Engineer's staff. These facilities shall include the necessary site accommodation, laboratories and offices, all the necessary furnishings and services, as well as all the arrangements in connection with the property, buildings and/or land, on which the Engineer's facilities will be provided.

The specifications for the site accommodation and the site laboratory and office buildings, together with all the fittings and furnishing required, are specified in this section. If necessary, additional details and requirements will be specified in the Contract Documentation or provided by the Engineer.

j) A1.4.2 DEFINITIONS

Engineer's site facilities -the Engineer's site accommodation, laboratories and offices are temporary buildings provided on site, or existing buildings on or near the site. Together with the required water, sewage, telecommunication, internet and electricity services these shall be known as the Engineer's site facilities. (The Engineer's site facilities shall be provided by the Contractor for the duration of the Contract to house the Engineer's site personnel, accommodate all the materials testing equipment required to carry out the Engineer's acceptance control testing and to provide office space for the Engineer's site personnel.)

k) A1.4.3 GENERAL

Where not already provided in the Contract Documentation, the Engineer shall furnish the Contractor with full details, in writing, regarding the number, type, layouts and furnishing of all site accommodation, laboratories and offices required for the use of the Engineer's site personnel.

l) A1.4.5 MATERIALS

The Contractor shall be responsible for the selection and purchase of all materials required to provide the Engineer's site facilities. The Contractor shall ensure that the specified standards are met and that all applicable legislative and regulatory requirements, building standards and health and safety requirements are complied with.

m) A1.4.7 EXECUTION OF THE WORKS

(1) A1.4.7.1 Offices and laboratories

a) General

The provision of new structures, and/or the refurbishment and alteration of existing permanent structures, shall be done with approved materials in a manner which will provide adequate lighting, ventilation, insulation, noise damping and fire protection.

b) Offices

The various types of offices required shall be as instructed by the Engineer. Unless otherwise specified in the Contract Documentation, the fittings, furniture and equipment shall conform to the following requirements:

e) Areas around offices and laboratories

The access roads and parking areas at the offices and laboratories shall be treated to make them dust free, either with a layer of crushed stone or with an approved bituminous surfacing. They shall be well drained and kept trafficable and free from mud at all times. Footpaths shall be paved with concrete, interlocking blocks or paving slabs to provide convenient, all weather access to all buildings.

f) Ablution unit

An ablution unit with a clean potable hot and cold water supply and a water-borne sewerage system, including septic tanks if necessary, shall be provided for the Engineer's facilities. The ablution unit shall be established in a position that is easily accessible to both the Engineer's offices and the laboratory buildings. The ablution unit shall have separate rooms for males and females and each room shall have a floor area of at least 6m² with a lockable door and shall be equipped with:

g) Kitchen unit

The Contractor shall supply a kitchen unit with a clean potable hot and cold water supply for the Engineer's offices with a minimum floor area of 6 m² and connected to the Engineer's offices. The kitchen shall be equipped with:

(2) A1.4.7.2 Housing

a) Prefabricated houses

If prefabricated houses are scheduled to be provided by the Contractor the minimum requirements for the different types of houses that may be required are as specified below, unless specified otherwise in the Contract Documentation.

b) Rented accommodation

The Engineer shall usually be responsible for providing suitable accommodation for his site staff in a hotel, guesthouse, rented house or a rented apartment in the nearest town or on a nearby farm.

The Engineer may instruct the Contractor to pay for any hotel or other accommodation or leased houses required. If so instructed by the Engineer the Contractor shall enter into the necessary contracts for the lease of such accommodation as may be required and shall not unreasonably object to the terms and conditions of such leases to be negotiated by the Engineer.

Where appropriate, and in the case where the rented accommodation is not deemed to be the primary residence of the site staff member, the lease agreement shall include full compensation for a periodic garden service.

(3) A1.4.7.3 Services

a) Sanitary arrangements

The Contractor shall be responsible for providing all sanitary services necessary for keeping latrines in a clean, neat and hygienic condition.

When no municipal sewage treatment is available, the Contractor shall provide the necessary septic tanks for all latrines. Waste water and septic-tank effluent shall be taken into properly designed French drains. The Contractor shall also make provision for the removal of all rubbish.

Where the construction of septic tanks or a water-borne sewerage scheme is unfeasible, the Contractor shall provide conservancy tanks and make arrangements for the removal and disposal of sewage.

b) Water, electricity and gas

The Contractor shall provide a constant supply of clean potable water suitable for human consumption as well as the necessary electric power together with the required electrical network to the offices, laboratories and any site housing.

(4) A1.4.7.4 Maintenance of the Engineer's site facilities and accommodation

The Contractor shall maintain the Engineer's office, laboratory and site accommodation facilities in a clean, neat and tidy condition for the duration of the Contract. The Contractor shall also maintain all the access roads to the Engineer's site facilities including any publicly or privately owned roads that the Engineer is making use of. Depending on the initial condition of the access roads this may entail repairing any potholes and edge breaks of surfaced roads or the re-gravelling of the road and subsequently the regular watering, blading and rolling of the surface to maintain a firm surface without excessive corrugations and loose materials. The Contractor shall ensure that the access roads to the Engineer's facilities are always in a safe and passable condition for normal cars under all weather conditions.

The Contractor shall provide all labour, equipment and material which may be necessary for keeping all the buildings in a neat and clean condition. To this end the Contractor shall provide cleaners and sanitary personnel and shall supply all soap, toilet paper, linen roller towels, cleaning aids and a refuse removal service.

The Engineer's offices, laboratory buildings, kitchen, ablution units and any accommodation on site shall be cleaned daily.

Any repairs required shall be made immediately following a request from the Engineer.

(5) A1.4.7.5 Office staff

If specified in the Contract Documentation the Contractor, in consultation with the Engineer, shall appoint an office secretary/receptionist and the requested number of technical assistants to provide a continuous service to the Engineer's site personnel.

These staff shall be paid by the Contractor including the provision of transport and other all other costs and benefits to the same extent as the Contractor provides for his own employees of a similar grade.

The person selected as secretary/receptionist may have limited experience but must have the potential and be willing to receive training (both formal and informal) to develop into a competent secretary / receptionist within a successful probation period of two months after appointment, failing which the person shall be substituted.

The technical assistant/s shall be suitably educated with sufficient mathematical ability to perform the duties of a survey assistant, assistant laboratory technician or an assistant quantity surveyor. Where available the technical assistant/s shall be student technicians who need to fulfil their practical training requirements.

The Engineer shall be at liberty to accept or reject the staff offered.

A1.5 ACCOMMODATION OF TRAFFIC

PART A: SPECIFICATIONS

n) A1.5.1 SCOPE

o) A1.5.3 GENERAL

(1) A1.5.3.1 Access to properties

The Contractor shall provide and maintain access to all public and private properties which fall within or adjoin the Works at all times, unless alternate provision is specified in the Contract Documentation.

(2) A1.5.3.2 General requirements

The Contractor may not commence any part of the Works until adequate provision has been made for the accommodation of vehicular, nonmotorised and pedestrian traffic. Traffic shall be accommodated in accordance with the requirements given in the Contract Documentation unless the Contractor has submitted an alternative incorporating an amended method of traffic accommodation and this alternate method has been accepted by the Employer.

(3) A1.5.3.3 Lane width

The clear width of any traffic lane which is provided along any section of a detour, a temporary deviation or any partial / half width construction area shall not be less than 3,5 m unless a narrower width is specified in the Contract Documentation or approved by the Engineer in writing. If a lane width less than 3,5 m is specified or approved by the Engineer then temporary width restriction warning signs shall be erected at approved locations along the narrow section of the detour, temporary deviation or partial / half width construction areas.

(4) A1.5.3.4 Late occupation of traffic lanes, interchange ramps and cross roads

If specified in the Contract Documentation the Contractor shall be charged a lane occupation levy for any occupation of traffic lanes, interchange ramps and any cross roads beyond the completion dates and times agreed with the Employer. The lane occupation levies shall be specified in the Contract Documentation and they shall be deducted from payments due on the relevant interim payment certificates. If specified in the Contract Documentation the Contractor shall also be charged a lane occupation levy for traffic lanes, interchange ramps and cross roads occupied by the Contractor for the purpose of carrying out remedial work during or after completion of the Works.

(5) A1.5.3.5 Legal requirements

In addition to the specifications given in the Contract Documentation all traffic accommodation arrangements shall also conform to the specifications and provisions given in the latest edition of the South African Road Traffic Signs Manual (SARTSM) and all other current legislation and regulations.

(6) A1.5.3.6 Other traffic control measures ordered by the Engineer

(7)

The Engineer may instruct the Contractor to provide any other road sign, reflective tape, etc. not measured in standard payment items. Such road signs shall conform to the requirements given in Volume 2 of the SARTSM and/or specified in the Contract Documentation or by the Engineer in writing. To ensure that the travelling public is kept fully informed and warned on matters relating to the accommodation of traffic, construction sign posting and the effect of the construction on the free flow of traffic through the site, the Engineer may instruct the Contractor to arrange for advertising in the press, on the local radio stations and/or for other forms of publicity.

(8) A1.5.3.7 Penalty events

Whenever the Contractor fails or refuses to take the necessary steps to ensure the safety and convenience of the public and/or to accommodate the traffic, pedestrians and non-motorised traffic and maintain the temporary detours, deviations, traffic accommodation facilities and traffic safety devices correctly in accordance with all the requirements and specifications given in the Contract Documentation, the Contractor shall be subject to the following penalty conditions:

(9) A1.5.3.8 Property pegs and survey beacons

Temporary deviations shall be constructed so as not to damage or displace existing cadastral beacons or trigonometrical-survey beacons. In exceptional cases where this is not possible, the Contractor shall notify the Engineer in good time so that the Engineer can arrange to have them suitably referenced before they are displaced. Cadastral beacons shall be replaced at the cost of the Contractor, unless removal is specified by the Engineer.

(10) A1.5.3.9 Right of way

The travelling public shall have the right of way on public roads, existing roads used as detours and on all temporary deviations for the entire contract period. The Contractor shall make use of approved methods to control the movement of the construction equipment and vehicles so as not to constitute a hazard on the road or impede the public right of way.

(11) A1.5.3.10 Safety of the travelling public and the Contractor's employees

(12)

The safety of the travelling public, and of the Contractor's and the Engineer's employees is of paramount importance and shall take priority over all aspects of the Works. The Contractor shall be responsible for the safe and easy passage of all vehicular, non-motorised and pedestrian traffic past and/or over the Works in a manner which will protect the road users, pedestrians, the Contractor's employees and the Engineer's employees.

(13) A1.5.3. 11 Services

Services affected by temporary deviations shall be located, protected and relocated in a similar manner as services affected by the permanent Works as specified in Clause A2.1.3.2 of Chapter 2. The requirements given in the Contract Documentation shall also be applicable to any services affected by the construction of temporary deviations.

(14) A1.5.3.12 The use of public roads by the Contractor

The Contractor shall have the right to use public roads, including any detours and temporary deviations open to public traffic, subject to the provisions and restrictions specified in Clause A4.1.7.1 of Chapter 4 and in the Contract Documentation.

(15) A1.5.3.13 Traffic over completed pavement layers and structures

Traffic over the completed pavement layers and structures on an uncompleted road shall be restricted to the vehicles and equipment required for the construction of the remaining Works. All construction vehicles will be restricted to the maximum axle loads permitted on public roads by the statutory provisions.

If it is necessary to temporarily accommodate public traffic over the completed pavement layers and structures on an uncompleted road this shall only be done if agreed to by the Engineer.

The Contractor shall be responsible for protecting and maintaining the pavement layers. Any damage to the layers shall be repaired or rectified at the Contractor's own cost unless the Engineer agrees in writing to pay for some or all of these costs.

(16) A1.5.3.14 Vertical clearance

The minimum vertical clearance over any section of a temporary deviation shall be 5,2 m. If the minimum vertical clearance is less than 5,2 m then approved warning signage shall be erected at approved locations on the overhead obstruction itself as well as in advance of the obstruction. The advance warning signs shall be erected at distances of 1,0 km, 400 m and 200 m in advance of the overhead obstruction.

(17) A1.5.6.3 Traffic safety vehicle

The traffic safety vehicle to be used for transporting, placing, relocating and removing the traffic accommodation facilities and the traffic safety devices shall be a truck with a load capacity of at least 5 tons fitted with:

(18) A1.5.6.4 Traffic safety officer's vehicle

The traffic safety officer's vehicle shall be provided for his sole use to enable him to carry out his supervisory duties.

(19) A1.5.7.3 Accommodation of traffic where the road is constructed in half or partial widths

Where, for reasons related to traffic, geometric or other restraints, the provision of a detour, or the construction of a temporary deviation alongside or in close proximity to the roadworks, is not possible or impracticable, the

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Contractor shall construct the Works on a half or partial width of the existing road so as to allow public and construction traffic to use that remainder of the road surface which is currently not under construction.

(20) A1.5.7.6 Maintenance of existing roads used as detours

Where specified in the Contract Documentation, all existing roads used as detours by public traffic, and/or by the Contractor's vehicles, for bypassing the Site of the Works shall be maintained by the Contractor in a good and safe trafficable condition for the entire period during which such roads are used as detours.

Maintenance of these roads used as detours shall include grass cutting, removal of rubbish, cleaning of all drains and culverts and repair of potholes and surface failures as instructed by the Engineer. Unless otherwise specified in the Contract Documentation the maintenance work shall also include the care and maintenance of all road markings, road signs, delineators and guardrails.

(21) A1.5.7.8 Informing the road users

The Contractor shall on a continual basis, and at least one week prior to a major event, inform the road users of the intended road Works, construction period and accommodation of traffic arrangements through press releases in local and provincial newspapers and via local radio channels.

Any temporary road closures required for blasting operations, or for any other reason, shall also be advertised on sign boards erected in appropriate positions along the section of road to be closed at least fourteen calendar days prior to each closure.

(22) A1.5.7.9 Lighting of construction access points during night work

Where work is required to be done during the night the Contractor shall make adequate provision for additional lighting to ensure that all vehicle and equipment entry and exit points are adequately lighted. The Contractor shall provide floodlights to ensure that a minimum 200 lux lighting level is provided at all these areas.

The floodlights must be mounted on masts at least 9m high to ensure that they illuminate the required areas without being directed into the vision of oncoming drivers.

(23) A1.5.7.10 Construction of temporary deviations

a) General

Unless otherwise specified in the Contract Documentation, or instructed by the Engineer in writing, the construction of temporary deviations shall be done in conformance with the requirements and specifications given in this section as well as in other relevant chapters of this Standard Specification as follows:

The proposed location and layout of all temporary deviations, including the signage required, shall be agreed with the Engineer before construction of the temporary deviation commences.

(24) A1.5.7.12 Traffic safety officer

The Contractor shall appoint a knowledgeable, experienced and conscientious person as his traffic safety officer who shall be responsible for the arrangements and maintenance of all accommodation of traffic measures required for the duration of the contract. The Contractor shall submit details of the person's qualifications, training and experience to the Engineer for comment before appointing him.

**A1.6 CLEARING AND GRUBBING
PART A: SPECIFICATIONS**

p) A1.6.1 SCOPE

q) A1.6.2 DEFINITIONS

Clearing -is the removal, loading and disposal of all trees (including designated and protected trees if approved for removal), grass, brush, shrubs, other vegetation, rubbish/litter, rocks and boulders of up to 0,15 m³ in size which are exposed or lying on the surface and all other unsuitable or waste material on or above ground level.

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Clearing shall also include the removal of existing buildings, walls and other structures which encroach on or obstruct the Works and which can be broken down and removed with a medium sized bulldozer. (Breaking down of reinforced concrete shall be specified separately in the Contract Documentation if required.)

Removal of temporary works installed by the Contractor shall not be measured or paid for as clearing.

The removal, loading, transport, offloading and stacking (or disposal if specified in the Contract Documentation or by the Engineer) of existing fences, road signs, guardrails, kerbing, channelling etc. shall be carried out as specified in the relevant sections of this Standard Specification.

Designated trees -are indigenous trees or heritage trees that may not be removed without the approval of the relevant local authority.

Designated spoil areas -are spoil or dump sites identified by the Employer in the Contract Documentation or identified by the Engineer on site and those identified by the Contractor in the Contractor's materials management and utilisation plan, as prepared in accordance with the environmental regulations and the environmental management plan.

There are two types of designated spoil areas:

- Unsuitable material spoil areas identified on or near the site of the Works and which have been agreed to by the Engineer. In urban or peri-urban areas the use of the spoil areas shall be approved by the local municipal authority in writing before any general unsuitable material is deposited there.
- Hazardous waste spoil areas which shall be commercial or municipal waste sites that are registered to receive and dispose of hazardous waste material.

Grubbing - is the removal and loading of all stumps and roots in areas where clearing has been carried out and the Engineer has confirmed in writing that grubbing is also required. Grubbing also includes the removal and loading of all non-reinforced building foundations and floor slabs, buried rubbish and other unsuitable or waste material.

Hazardous waste material - material that is cleared and grubbed shall be classified as hazardous waste material if it falls into the hazardous waste categories identified in SANS 10228.

Protected trees - are trees as listed in the Schedule of Protected Trees given in the Government Gazette dated 8th September 2017 (or any later amendments) issued in terms of Clause 15.3 in Chapter 3, Part 3 of the National Forests Act No. 84 of 1988. In terms of this Act protected trees may not be pruned or removed without the permission of the Minister of Agriculture, Fisheries and Forestry.

Stockpile - is a pile of material pushed into a large heaped pile or off-loaded onto a heaped pile so that the material can be temporarily stored for later re-use in the Works. Where specified the material to be placed in a stockpile shall be placed in evenly spread layers of a specified layer thickness, up to the specified maximum height and to the specified shape.

Stockpile site - is a designated site that shall be prepared as specified in Chapter 4, Clause A4.1.7.3a).

Topsoil -is fertile, loamy soil obtained from areas with good soil coverage of natural vegetation, preferably grasses. It shall be free of deleterious matter, such as stiff/heavy clays, large stones, large roots, refuse, rubble and construction material or waste, which will adversely affect its suitability for the planting of grass.

Windrow -is a pile of material which has been excavated and pushed a relatively short distance to a prepared area alongside the borrow pit, quarry, cutting or roadbed area so that the material can be temporarily stored for re-use, usually close to where it is windrowed

A1.7 LOADING AND HAULING

PART A: SPECIFICATIONS

r) A1.7.1 SCOPE

This Section covers the loading and hauling of construction materials on the site of the Works.

s) A1.7.2 DEFINITIONS

Hauling -is the moving of loaded construction material from the point of excavation, or from a stockpile or windrow, to the point of use on the site or to designated spoil areas. The hauling operation shall include the off-loading of the material at the point of use on site, at the temporary stockpiles or at the designated spoil sites as applicable.

Haul roads -are temporary roads constructed by the Contractor, or existing public or privately owned roads, or any part or section of the road under construction, used for the purposes of hauling construction materials or for carting material to spoil.

Loading -is the operation of picking up the material from an excavation, stockpile or windrow and placing it in a haul vehicle.

t) A1.7.3 GENERAL

(1) A1.7.3.1 Measurement of haul distance

The haul distance shall usually be measured from the centre of volume (centroid) of the excavation in the cutting (or part of a cutting), trench or borrow pit, or from the centre of the stockpile position where applicable, to the centroid of the fill (or part of a fill), to the mid-point along the road centreline of the section of the road layer where the material is placed, to the centre of the temporary stockpile position in a borrow pit, quarry or on site or to the centre of the designated spoil area where the material is off loaded as applicable. The haul distance will be measured to the nearest 0,1 km.

For those operations where the material is usually disposed of, and/or reused, near the source of the material the relevant pay item may state that the cost of hauling the material for the first 1,0 km shall be included in the contract rate for that pay item. For these operations the hauling of the material shall only be measured if the actual haul distance exceeds 1,0 km and the haul distance to be measured for payment shall be measured from a point starting 1,0 km from the centre of volume (centroid) of the excavation in the trench or borrow pit, or from the centre of the stockpile position where applicable, up to the centroid of the fill (or part of a fill), up to the mid-point along the road centreline of the section of the road layer where the material is placed or up to the centre of the designated spoil area where the material is off loaded as applicable. The haul distance will be measured to the nearest 0,1 km. The haul distance shall be measured along the shortest route as instructed by the Engineer as being safe and practical. The haul distance shall include any distance that the haul vehicle must travel to make use of a safe turning point or the next off ramp before making the return trip. Should the Contractor choose to haul material over some other longer route, computations for payment shall nevertheless be based on the haul distance measured along the shortest route instructed by the Engineer.

(2) A1.7.3.2 Haul and construction access roads

The construction, use and later closure / reinstatement of any haul roads and construction access roads that are required by the Contractor shall be carried out in accordance with the requirements given in Clause A4.1.7.1 of Chapter 4.

The requirements for the use of any existing public roads by the Contractor to haul material are given in Clause A4.1.7.1a) of Chapter 4.

The requirements for the use of haul roads not on existing public roads are given in Clause A1.2.3.2.

A2.1 GENERAL REQUIREMENTS AND TRENCHING FOR SERVICES

PART A: SPECIFICATIONS

(3) A2.1.1.2 Location, identification, protection and relocation of existing services

Section A2.1 also covers the work associated with the location and identification of all existing services on the site and the protection and/or relocation of existing services. Existing services shall be located, identified and protected

or relocated in accordance with the details shown on the drawings, provided in the Contract Documentation or as directed by the Engineer.

(4) A2.1.3.2 Location, identification, protection and relocation of existing *services*

b) Location of existing services

Before any work can commence the Contractor shall verify the actual position of each known existing service and bring to the attention of the Engineer any previously unknown service that is not recorded in the existing as-built or wayleave records or indicated in the Contract Documentation.

c) Condition of existing services

The Contractor shall acknowledge that he has inspected and examined all known existing services and all existing services subsequently discovered on site and is satisfied that all such services were in an acceptable and serviceable state at the commencement of the works, or alternatively, upon verification thereof as contemplated in Clause A2.1.3.2b). The Contractor shall report all services that are damaged or not in an acceptable and serviceable state to the Engineer.

d) Protection of services

(i) Service owners

Prior to commencing work, the Contractor shall confer with all service owners, authorities and departments concerned and obtain the necessary wayleaves, permits or permissions for both overhead and underground services affected by the works and shall satisfy himself that all the relevant information required to complete the contract has been obtained. Refer to Clause A2.1.3.8 in this regard.

(ii) Protection

During the course of the works all known existing services including traffic signals, water mains, sewers, electricity transmission and communication lines, cables, poles, pipes and ducts as well as any storm water or drainage infrastructure, whether in service or not, shall be protected, supported and maintained to the satisfaction of the service owner, authority or department concerned and the Engineer.

(iii) Damage

The Contractor will be held responsible for any damage caused by him to known existing services, anywhere along the entire lengths of their routes, as may reasonably be deduced from the actual locations at which their positions were verified in accordance with Clause A2.1.3.2b), due cognisance being taken of such deviations in line and level which may reasonably be anticipated, unless the Contractor can prove that reasonable diligence and care had been exercised and that the damage was unavoidable despite all precautions. The Contractor will not be held responsible for any damage caused if the position of a known existing service deviated by more than 1,0 m horizontally or 0,5 m vertically from the position as may reasonably have been determined after the location and verification of the service's position in accordance with Clause A2.1.3.2b).

(iv) Relocation

Whenever services are encountered which interfere with the execution of the works, and which must be moved and relocated, the Contractor shall advise the Engineer, who will determine the extent of the work, if any, to be undertaken by the Contractor in moving, relocating and reinstating or protecting such services.

(5) A2.1.7.3 Railway reserves, bridge and other special crossings

Where services or ducts have to be installed across railway reserves, bridges or other structures or in any other special circumstances the work for such crossings shall be carried out in accordance with the requirements of the Contract Documentation and in accordance with the applicable sections of this specification.

C2.1 GENERAL REQUIREMENTS AND TRENCHING FOR SERVICES

A4.1 BORROW MATERIALS

PART A: SPECIFICATIONS

A4.1.1 SCOPE

This Section covers the work requirements for sourcing natural or crushed compliant materials that can be used for the construction of earthworks and road pavement layers from borrow pits and quarries that are developed and operated to supply materials for a specific road construction project or projects. It contains the following specifications:

- Definitions applicable for Chapters 4 and 5.
- Responsibilities and duties of the Employer and the Contractor in providing geotechnical information, and information on the preparation of management and utilisation plans for the borrow pits and quarries.
- The material specifications for the earthworks and road pavement layers.
- The requirements for the control, excavation, selection of material, and closure of borrow pits and quarries, as well as definitions for the different classes of excavation.
- Producing of the road construction materials by crushing and/or screening.
- The preparation of stockpile sites and the stockpiling of materials.

Operations at quarries of commercial suppliers to produce commercial materials are excluded from the requirements in this Section A4.1, except for the material specifications in Clause A4.1.5.

Specifications for aggregate to be used in subsoil drains, asphalt, seals, gabions and concrete are not included in this Chapter 4 but are included in the relevant Chapters where these works are specified.

The sourcing of materials from road cuttings, box cuts and designated excavations, from existing roads, from commercial sources, and the use of alternative materials are covered in the other Sections of this Chapter 4.

Chapter 5 – Earthworks and Pavement layers: Construction, covers the construction of the road pavement layers.

SANS test methods published by the South African Bureau of Standards (SABS) are listed in Chapter 20.

A4.1.7.2 Borrow pit and quarry operations

a) General control at the borrow pits and quarries

The Contractor shall be responsible for controlling operations at every borrow pit and quarry to ensure compliance with all the requirements of the statutory authorisation, approvals and the Contract Documentation. Sufficient tests shall be conducted on the excavated material to ensure that the quality of the material complies with the specified requirements for the particular layer for which it will be used. The test results shall be delivered to the Engineer for review.

When specified in the Contract Documentation, the Contractor shall have a full time or part time materials manager to conduct and manage the duties for the control at the borrow pits and quarries. The requirements for the materials manager, whether the person shall be an engineering geologist, engineer, a senior materials technician or a senior general foreman, and the required qualifications and experience of the materials manager, shall then also be specified.

b) Classes of excavation

The excavation of borrow material shall be classified as follows:

(i) Soft excavation

Soft excavation class is excavation of material that can be efficiently removed by the reference construction equipment specified in the Contract Documentation, without prior breaking down.

Very dense granular or sand material and stiff to very stiff cohesive clay material, which can still be removed by the reference construction equipment without prior breaking up as specified for hard material but that do not comply with the definition of efficient removal of the equipment, shall also be classed as soft excavation.

In the absence of any construction equipment specified to reference the efficient removal of the material, a hydraulic crawler excavator in good mechanical order with nett horsepower (flywheel power) generally between 180 kW and 225 kW, also known as a 30 ton excavator, and equipped with a heavy duty bucket shall be the reference construction equipment. A minimum continuous production rate of

160 m³/h of the excavated material will be taken as the benchmark for the excavator's capacity and efficiency.

(ii) *Boulder excavation class A*

Where material contains in excess of 40 % by volume of boulders, core stones, floaters and lumps of hard material larger than 200 mm but volume less than 20 m³ in size, in a matrix of soft material, then the full volume excavated shall be classed as boulder excavation class A.

Excavation in dolomite formations other than solid dolomite shall also be classed as boulder excavation class A if the formations contain in excess of 40 % by volume of lumps of hard dolomite larger than 200 mm but volume less than 20 m³ in size, in a matrix of softer material or smaller lumps of hard dolomite.

Excavation of fissured or fractured rock shall not be classed as boulder excavation but as soft or hard excavation according to the nature of the material.

(iii) *Boulder excavation class B*

Where material contains 40 % or less by volume of boulders, core stones, floaters and lumps of hard material larger than 200 mm but volume less than 20 m³ in a matrix of soft material, then the volume of the individual boulders, core stones, floaters and lumps of hard material shall be classed as boulder excavation class B.

The volume of the rest of the material shall be classed as soft excavation.

Selection and excavation of material in borrow pits

Once the material compliant for the works is exposed in a borrow pit, the Contractor shall:

- Plan the utilisation in such a manner that the pioneer and fill material can be selected, excavated and loaded directly for use on the road. Only after approval, where the fill layers cannot be constructed immediately or for reasons beyond the Contractor's control, shall the material be temporarily stockpiled. The Contractor shall cease excavation of the fill material until it can be processed on the road, at no cost to the Employer.
- For all the pavement layer materials the Contractor shall always select, excavate, remove and place the material into compliant separate stockpiles to provide a uniform material, prior to removal of the material to the road. Where it is not feasible to stockpile the material within the borrow pit or borrow pit area the Engineer shall designate other temporary stockpile areas elsewhere outside the borrow pit area. Measurement and payment shall be made for this stockpile activity.
- Control the rehabilitation and closure of the borrow pit.

l) Use of the borrow material

The results of laboratory tests, trial pits and borehole drilling of materials carried out during the design stage are included in the Contract Documentation. The results and other information give a preliminary indication as to the purpose for which and where the material shall be used. The Engineer shall give final instructions during construction regarding the use of the borrow material.

m) Closing of the borrow pits and quarries

The operations and requirements for shaping, finishing, rehabilitation and closure of the borrow pits and quarries after the removal of the road construction material is completed, are contained in the borrow pit and quarry plans approved by the control authority and shall be complied with.

A4.1.7.3 Stockpiles

a) Preparation of the stockpile site

Stockpile sites shall be prepared in positions as indicated on the borrow pit or quarry plans, or at positions agreed to and indicated on the M&U plans.

Stockpiling of the material

The material shall be off-loaded and spread uniformly in layers in the stockpile. Segregation of the material during the handling shall be avoided.

c) Reinstatement of the stockpile site

After the stockpiled material has been removed, the site shall be reinstated as closely as possible to its original condition.

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In the absence of any specified conditions in the borrow pit or quarry approvals, or elsewhere in the Contract Documentation the following minimum requirements shall be complied with:

- All surplus stockpiled material shall be removed and disposed of,
- Material used to construct a fill platform and the temporary banks shall be removed and disposed of, unless the Contractor is instructed to leave the banks in place to prevent future erosion,
- The stockpile floor shall be graded to the original natural contours,
- The stockpile floor shall be ripped 100 mm deep to break all compacted in situ material, and
- The stockpile site shall be lightly scarified to promote growth of natural vegetation or shall be covered with a 75 mm to 150 mm thick topsoil layer and vegetated when required in the statutory approvals.
- The daily and monthly product reports of at least the nett weights.

A4.4 COMMERCIAL MATERIALS

PART A: SPECIFICATIONS

A4.4.1 SCOPE

This Section covers:

- The provision of natural or crushed materials for a specific road construction project or projects that are procured from commercial and other private sources. It includes information on the requirements for providing the commercial materials for earthworks and road pavement layers as an alternative to sourcing these materials from borrow pits, from quarries, from cuttings, box cuts and designated excavations or from existing roads.

A4.4.2 DEFINITIONS

The relevant definitions in Chapter 1 and Clause A4.1.2 shall also be applicable to this Section. Additional definitions for this Section are listed below.

Commercial materials -are natural gravel, sand or crushed rock materials:

- Sourced from commercial suppliers. These materials are sold by commercial suppliers and are generally crushed materials acquired from quarry operations or from stockpiles of non-ore containing material excavated during mining operations and shall already comply with the gradation and other material requirements, or
- Sourced from private or other non-commercial suppliers identified by the Employer or the Contractor, or material from the Employer's or Contractor's own sources. These materials are usually natural materials available in excavations or stockpiles, and the primary objective for excavating the material is/was not for road construction purposes. It is distinguished from material sourced from borrow pits and quarries in Section 4.1, in that the excavation or sourcing does not require a mining right or a mining permit in terms of South African legislation, although other legislative approvals may be required. Commercial materials from private or other non-commercial suppliers or from the Employer's own sources may require removal or breaking down of oversize material, screening, crushing or crushing and screening.

Dust palliatives -are products applied to the surface of a wearing course of an unsealed road or worked into the layer to reduce the dust and loss of fines.

Non-traditional stabilising or soil treatment agents -non-traditional stabilisation or soil treatment agents can be:

- Sulfonated petroleum products (SPPs), also known as ionic soil stabilisers.
- Polymers, essentially plastic materials derived from acrylic polymers and commonly used as household glues.
- Nano-technology products that utilise processes at the molecular level within bitumen to improve the material properties.

Non-traditional stabilising or soil treatment agents are sometimes also referred to as proprietary stabilising agents.

Stabilisation - is the treatment of natural or crushed material to enhance the strength (load bearing capacity) and stiffness, and/or to make the material more water resistant to improve the durability. Marginal non-compliant

material can also be made compliant for use after stabilisation. Stabilisation of material may take place by means of mechanical modification, also referred to as granular stabilisation (for example material blending), chemical (for example mainly modification or modification and cementation), electrical (for example ion exchange), or material improvement (for example using bitumen emulsion or foamed bitumen).

Traditional stabilising agents -these are agents that have generally been used through the years to stabilise materials, and are classified as:

- Cementitious stabilising agents (cement and lime), also referred to as stabilisers.
- Bituminous stabilising agents (added as an emulsion or in a foamed state).

A4.4.3 GENERAL

A4.4.3.1 Employer identified commercial materials

a) Materials from commercial suppliers

The Employer may identify and include test results of compliant materials from commercial suppliers in the Contract Documentation. However, the Contractor shall still be responsible for sourcing the material and for ensuring the sufficiency in quantity and quality of the material intended for use in the contract.

The Employer will usually not conclude any arrangements with these commercial suppliers, and the Contractor shall enter into negotiations with them and conclude contracts for the price, payments, rate of supply and the like.

Once the Contractor has chosen one or more of the commercial suppliers identified by the Employer, further dealings with the supplier and procuring the material shall be undertaken by the Contractor.

b) Materials from private or non-commercial suppliers

The sources and results of any material testing of materials from private or non-commercial suppliers that have been identified by the Employer, will be included in the Contract Documentation. This information is indicative as to the sufficiency in quality and quantity of the material.

The Contract Documentation shall also specify the arrangements made with the suppliers and specifically those that the Contractor must comply with, and any further negotiations that the Contractor shall conclude.

c) Materials from the Employer's own sources

The material is free issued to the Contractor, unless otherwise stated in the Contract Documentation when any conditions of the Employer shall then also be specified.

The results of any material testing will also be included in the Contract Documentation.

A4.4.3.2 Contractor identified suppliers or sources

When no commercial sources are identified by the Employer in the Contract Documentation or if so instructed, the Contractor shall identify compliant material sources. The Contractor can also identify compliant commercial or private / non-commercial material sources, or material from the Contractor's own sources, other than those identified by the Employer for utilisation in the works as an alternative material source.

A4.4.5.8 Quality of materials

It is the Contractor's responsibility to ensure that the commercial materials including the procuring, loading, hauling, and/or further stockpiling if applicable, shall comply with the material specifications.

Any approval or consent given previously for the use of any commercial material may be cancelled, if the material quality has altered so that it does not comply with the specifications anymore.

A4.4.7.2 Storage of stabilising agents on site

a) Cement provided in pockets

Cement delivered in pockets can be kept at the road on pallets or on a raised platform for no longer than two weeks. The pockets shall always be protected from the ingress of any moisture with a waterproof tarpaulin or plastic cover not less than 1,0 mm thick.

For longer storage periods, the cement bags shall be stored in a shed. The requirements for the shed and for storing are:

- Storage sheds shall be watertight and of solid construction.
- The floor shall be waterproof and covered with plastic sheets not less than 1,0 mm thick.

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- The pockets shall be stored on the delivery pallets, which must be stacked closely together (to reduce the circulation of air) and away from any outside walls.
- Pockets shall be stored in such a way that older pockets are used first.
- Vertical stacking of loose pockets shall not exceed 12 pockets high.
- Doors and windows shall be kept shut.

The permitted shelf life of cement stored in a shed is 6 months inland and 3 months in coastal areas. Cement which has been properly stored in an approved shed as specified above for longer than these periods, or at the road side for more than two weeks, shall not be used in the stabilisation works.

b) Lime

Lime can be kept at the road for up to six months on pallets or on a raised platform. The pockets shall always be protected from the ingress of any moisture with a waterproof tarpaulin or a plastic cover not less than 1,0 mm thick.

c) Bitumen

The maximum storage temperatures for penetration grade bitumens are given in Table A9.1.7.1 of Chapter 9. Binders stored in a heated condition shall be kept in a container with a securely fitting lid and the circulatory system that is functioning properly. The container shall be provided with a build-in thermometer. Binders which have been heated above the maximum allowed temperatures shall not be used and shall be removed from the site.

Bitumen emulsion shall be stored at ambient temperature in storage tanks fitted with a circulating pump system, which will enable the stored bitumen emulsion to be properly circulated in the static tank, especially when no bitumen emulsion has been drawn or added for a period of 2 to 3 consecutive days. The supplier shall be contacted for the maximum storage period.

d) Placing on the road

Pockets of stabilising agents shall only be placed immediately before the mixing and compaction operations are carried out, and after the gridlines have been marked out on the surface to ensure the correct application rate. Where this is not practical and approved by the Engineer, then pockets shall not be left on the road for longer than one day after placing the pockets prior to spreading the agent, as it may absorb moisture from the underlying layer or be damaged during other construction activities.

When the pockets of stabilising agents are placed on the road during periods of wet weather and get wet before the agent is spread and mixed into the layer, then the agent shall be removed to spoil and replaced with new dry agent at no cost to the Employer.

Where a pocket is broken on the road and mixing and compaction are not done within the specified time, the agent in the broken pocket shall be removed to spoil and replaced with new dry agent at no cost to the Employer.

When the stabilising agent is delivered to site in bulk tankers then the agent may only be dispensed onto the road immediately before the mixing and compaction operations are carried out.

A5.3 ROAD PAVEMENT LAYERS

PART A: SPECIFICATIONS

A5.3.1 SCOPE

This Section covers the work requirements for loading at the point of supply, the hauling and off-loading at the point of use, the spreading, mixing, watering and levelling and the compaction and finishing of pavement layer material required for the construction of the road pavement layers.

This Section also covers the work requirements for the loading of pavement layer material at the point of supply, the haulage to a central mixing plant to add and mix water and stabilising agent with the pavement material, hauling the mixed material to a paver at the point of use and then the construction of the pavement layer by paving, compacting and finishing the layer. This operation is known as plant-mixed, paver-laid (PMPL) pavement layer construction.

Material for the road pavement layers is produced as specified in the relevant Sections of Chapter 4.

The addition and mixing of stabilising agents either as an integral part of the PMPL process or for some of the conventionally placed road pavement layers that require treatment and/or stabilisation is specified in Section A5.4.

The reconstruction of existing road pavement layers is specified in Section A5.5.

A5.3.2 DEFINITIONS

The relevant definitions elsewhere in the standard specification are applicable. Additional definitions for this Section are included here.

Single-operation -a single-operation is the amount of work that can normally be carried out during the course of a single work shift using the applicable construction equipment.

A5.3.3 GENERAL

u) A5.3.3.1 Sources of material

The sourcing of material shall take place as specified in Chapter 4.

Material shall be obtained from approved sources such as borrow areas, cuts, stockpiles or reclaimed road materials from existing road pavement layers. Reclaimed road material shall be processed as specified in Section A4.3 of Chapter 4 to produce a material compliant with the material properties specified in Chapter 4 for the particular intended use of the material, as specified in the Contract Documentation.

Material may also be obtained from compliant commercial and alternative material sources as detailed in the Contract Documentation.

Crushed stone material shall be obtained from approved sources such as quarries, commercial sources and approved cuttings.

v) A5.3.3.2 Use of material

The Contract Documentation shall detail the proposed layers for which the different materials are suitable, including the proposed use of commercial materials and alternative materials.

Notwithstanding the proposed use of the various sources of materials given in the contract document the Contractor shall ensure that all material used for the pavement layers complies with the relevant material quality as specified in Chapter 4.

w) A5.3.3.3 Requirements prior to the construction of any pavement layer

The first pavement layer shall not be constructed until the following construction work has been completed:

- Construction of the fill must be completed;
- Construction of the cut must be completed;
- Construction of the roadbed through a cutting in soft or hard material, must be completed;
- All over-built material on fill slopes must be removed.

x) A5.3.3.4 Compaction of pavement layer material

All material used for the construction of pavement layers shall be mixed with water to the required compaction moisture content prior to being processed and compacted to the specified thickness, level and density. The material shall be compliant with the material requirements for each specific layer.

Compaction shall be carried out in a series of continuous processing and compacting operations covering the full width of the layer concerned. The length of any section of a layer being compacted shall not be more than what can be properly compacted with the available equipment in a single-operation or shorter period when specified in the Contract Documentation.

The Contractor shall reduce the length of any layer compacted in any single-operation, and/or change the compaction process and/or change the number of, or type of, equipment being used, if the specified thickness, level or density of the layer is not being achieved.

The type of compaction equipment used and the amount of rolling done shall be such as to ensure that the specified density, or the specified number of roller-passes, is obtained without damage being done to any of the underlying layers due to breakdown or settlement of the underlying layer.

The compacted layer shall be completed to the required density, thickness, levels, shape and cross-section specified in the Contract Documentation and within the tolerances specified in this Section. All oversize material, lamination layers and any excess material shall be removed from the compacted surface before any further pavement layers or surfacing is carried out.

y) A5.3.3.5 Existing or newly constructed infrastructure

During the construction of pavement layers, all existing or newly constructed drainage infrastructure such as concrete edging, kerbing and channelling, sidewalks, lined drains, manhole covers, kerb inlets and gratings shall not be displaced or damaged.

Furthermore, no damage shall be caused to any existing or newly constructed structures such as culverts, bridges and buildings or any roadside furniture such as road signs, guardrails, streetlights, fencing, service pipes and cables during the construction of pavement layers.

Where necessary small hand-operated compaction equipment shall be used to ensure that the specified compaction is achieved immediately adjacent to drainage infrastructure, structures and roadside furniture.

Any items damaged during construction shall be replaced or repaired immediately by the Contractor, at no cost to the Employer.

z) A5.3.3.6 Tie-ins at existing bituminous surfaces

At junctions with existing bituminous surfaces, the existing surfacing and layer work near the tie-in shall be cut back in a neat, straight line so as to ensure that the compacted thickness of the new base layer all the way up to the tie-in point, is not less than 150 mm.

aa) A5.3.3.8 Pavement layer drainage

Each compacted and completed pavement layer shall be adequately drained to prevent water from standing on or along the completed work. Windrows shall be removed immediately after construction to facilitate the drainage of water off the surface and to prevent scouring of the completed work. On steep grades the Contractor may need to provide temporary berms to divert the water off the road surface at regular intervals.

No material for a subsequent layer may be placed if the underlying pavement layer has been softened by moisture. The underlying pavement layer must first be allowed to dry out until the moisture content in the layer is below the optimum compaction moisture content. Any scouring of the pavement layer surface caused by storm water shall be repaired and the repairs approved by the Engineer before any material for the subsequent layer is placed.

If the underlying pavement layer cannot be adequately dried out or the water related damage cannot be satisfactorily repaired the affected layer shall be broken up and reprocessed at no cost to the Employer.

Where pavement layers are replaced over a section of the road width, or where pavement layers are widened and the permeability of the new layer is not the same as the adjacent existing layer, then subsoil drainage shall be installed along and below this interface as detailed and specified in the Contract Documentation.

bb) A5.3.3.9 Pavement layer protection and maintenance

The Contractor shall protect and maintain the completed pavement layers at no cost to the Employer until the next layer or the surfacing has been constructed and thereafter until the works have been taken over by the Employer.

Maintenance shall include the closing off of the constructed pavement layers to all public traffic (except traffic for property access along the route by owners/tenants) and construction traffic except the vehicles hauling in the next layer of construction material and the immediate repair of any damage done to the layer or of any defects in the layer. Repairs shall be carried out as instructed by the Engineer. The Contractor shall ensure that an even and uniform surface is restored after completion of the repair work.

The base layer shall be primed as soon after construction as possible once the base layer has dried out sufficiently to a point where the moisture content, measured at any depth within the base layer, is below 50 % of the optimum moisture content for the material. No public or construction traffic shall be permitted on the completed base layer either before priming the layer or on the primed layer.

cc) A5.3.3.11 Water for pavement layers

Water for the construction of pavement layers shall comply with the requirements of Clause A4.1.5.18 of Chapter 4.

A5.3.5 MATERIALS

dd) A5.3.5.1 Material information

The required material properties for each individual pavement layer for a specific pavement design shall be clearly specified in the Contract Documentation.

The Contract Documentation shall specify which types of materials are to be used for a PMPL layer.

Any anticipated mechanical modification of material shall be stated in the Contract Documentation.

ee) A5.3.5.2 Pavement layer thickness and compaction requirements

a) Pavement layer thickness requirements

The compacted pavement layer thickness shall be as specified in the Contract Documentation.

The thickness tolerances specified in Clause A5.3.8.4b) shall apply.

b) Gravel and soil pavement layer compaction requirements (G4B to G9 material)

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The minimum compacted dry density of a gravel or soil pavement layer shall be as specified in Table A5.3.5-1 unless specified otherwise in the Contract Documentation.

Table A5.3.5-1: Minimum compaction densities for gravel and soil pavement layers

Layer	Compaction as % of maximum dry density (MDD)
Lower selected layer	93 %
Upper selected layer	95 % for gravel layers
	100 % for sand layers (97 % when specified in Contract Documentation)
Wearing course layer	95 %
Shoulder layer	95 %
Lower subbase layer	95 % for unstabilised layers
	95 % for chemically stabilised layers
	100 % for sand layers
Upper subbase layer	97 % for unstabilised layers
	95 % for chemically stabilised layers
	100 % for sand layers
Base layer	100 % for unstabilised layers
	97 % for chemically stabilised layers

In restricted areas the compacted dry density of the individual pavement layers shall also comply with the requirements given in Table A5.3.5-1 unless specified otherwise in the Contract Documentation.

c) Crushed stone pavement layer compaction requirements (G1 to G4A and G5A materials)

The minimum compacted dry density of a crushed stone pavement layer shall be as specified in Table A5.3.5-2 unless specified otherwise in the Contract Documentation.

Table A5.3.5-2: Minimum compaction densities for crushed stone pavement layers

Layer	Compaction as % Maximum Dry Density (MDD) or as % Bulk Density (BD) or as % Apparent Density (AD)
G4A and G5A lower subbase layer	95 % of MDD for unstabilised layers
	95 % of MDD for chemically stabilised layers
G3, G4A and G5A upper subbase layer	97 % of MDD for unstabilised layers
	97 % of MDD for chemically stabilised layers
G3 and G4A base layer	98 % to 100 % of MDD (for G3 and G4A) or 85 % of BD for G3 only
G2 base layer	88 % of BD for Road category C and D (TRH 4, Table 1)
	86 % of AD for Road category A and B (TRH 4, Table 1)
G1 base layer	86 % of AD for Road category C and D (TRH 4, Table 1 for road categories)
	88 % of AD for Road category A and B (TRH 4, Table 1 for road categories)

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	categories)
PMPL pavement layer (lean mix concrete)	Cube crushing strength as specified in Contract Documentation. No density requirement.

The density of the compacted crushed stone base layers (G1 and G2 layers only) shall be tested to the full depth of the layer using a nuclear gauge.

In restricted areas the in-situ dry density of the crushed stone subbase and base layers shall also comply with the requirements given in Table A5.3.5-2 unless specified otherwise in the Contract Documentation.

A5.3.7 EXECUTION OF THE WORKS

ff) A5.3.7.4 Processing coarse gravel subbase or base layer

Coarse gravel containing mostly non-plastic or slightly plastic soil fines and used in the construction of a gravel subbase or base layer, shall require slushing and rolling in addition to the specified compaction, in order to obtain a firm, well-knit surface.

After being processed and compacted, the layer may require to be well watered by the Contractor over short sections at a time and then slushed and rolled with pneumatic and/or vibratory compactors. Watering and rolling shall continue over a section until excess fines have been brought to the surface of the layer. Such excess fines shall be uniformly spread over the entire surface of the layer by means of stiff mechanical or hand brooms.

Watering, rolling and brooming shall continue until all surface areas deficient in fines have been corrected. All excess fines shall then be broomed off the surface of the layer without loosening the surface texture of the completed layer.

gg) A5.3.7.5 Construction of gravel shoulder

Shoulder material shall be spread, watered, processed and compacted in accordance with the specifications for a pavement layer.

Where the gravel shoulder layer is to be constructed with the same gravel material as for the base layer, it shall be constructed simultaneously with the base layer.

Where a base is to be constructed with different gravel or with crushed stone material, the shoulders shall first be constructed and then neatly cut to the required line and level to provide lateral support for the edges of the new base layer material while it is being compacted. Care shall be taken not to contaminate the base material with the shoulder material. The Contractor shall ensure that the subbase layer and the base material that has not yet been compacted is adequately drained at all times by means of temporary drainage channels or pipes passing through the gravel shoulder layer.

Where an asphalt base layer is to be constructed, the shoulders shall be constructed after the completion of the asphalt base layer.

hh) A5.3.7.6 Construction of crushed stone layer

a) Transportation of crushed stone subbase and base material

Compliant crushed-stone material shall be loaded at source, hauled to the road and off-loaded along the middle of the road width being constructed, in a pre-determined heap volume and spacing to ensure sufficient quantity so that the completed layer will comply with all the requirements in regard to layer thickness, level, cross-section and compaction density. Allowance shall also be made when determining the heap volume and spacing for sufficient additional material to be off-loaded to enable the layer to be properly mixed and cut to shape without segregation of the material taking place. Segregation is manifest by fine and/or coarse areas that develop in the exposed surface of the layer. **b) Processing of crushed stone subbase and base layer**

ii) A5.3.7.7 Initial compaction of a G1 crushed stone base layer

Initial compaction of the crushed stone base layer shall commence immediately after completion of the spreading, dampening, mixing and shaping of the material as per Clause A5.3.7.6b). The Contractor shall

provide compaction equipment that is capable of compacting the crushed stone layer to the required density using the process specified below.

Only a vibratory smooth drum roller or a combination of smooth drum and pneumatic tyre rollers shall be used for the initial compaction. Normally no grid or pad foot rollers shall be used as these rollers will alter the grading. The first pass of the vibratory roller shall be in static mode in order to smooth out the surface of the layer prior to compaction. Thereafter vibration at low frequency and high amplitude for compaction of the lower part of the layer shall be carried out, followed by vibration at high frequency and low amplitude for final compaction of the upper part of the layer.

To prevent shoving of the crushed stone, rollers shall always initiate compaction of a crushed stone layer from the outside edge of the road adjacent to the shoulder material towards the middle of the layer width on straight sections where there is a cross-fall. In a super elevation in a curve, the compaction shall commence from the lower or inner edge of the road towards the higher or outer edge.

The roller shall cover the entire road width equally. Compaction shall continue until the material is stable and displays no movement under the roller wheels and leaves no tyre marks of the roller in the crushed stone layer. After the compaction is completed, a final slight full-width cut shall be carried out when necessary to ensure that the layer has no coarse or stony patches but an evenly-graded surface matrix. The layer must then again be rolled with pneumatic tyre or smooth drum static rollers to ensure that it is stable enough and ready for the final slush-compaction. The maximum compacted thickness of any crushed-stone layer compacted in one process shall be 150 mm, unless specified otherwise in the Contract Documentation.

jj) A5.3.7.8 Slush-compaction of a G1 crushed stone base layer

After completion of the initial compaction of the crushed stone base layer, short sections of the layer surface, each section about 40 m to 60 m long, shall be thoroughly watered, rolled and slushed by means of steel wheeled rollers or a combination of steel wheel rollers and pneumatic tyre rollers. The Contractor shall provide compaction equipment that is capable of slush compacting the crushed stone layer to the required density using the process specified below.

Slush-compaction shall start at the high side of the road so that the water can flow to the low side. No movement of the layer under the roller wheels shall be observable during the initiation of the slush-compaction. If the layer becomes unstable, it is an indication that insufficient bearing capacity has been achieved during the initial compaction. The slush-compaction shall then be halted, and the layer allowed to dry and subsequently to receive additional initial compaction before commencing again with the slush-compaction process.

The slush-compaction process shall continue until fines are brought to the surface. Fines shall mean sand or material larger than 0,075 mm up to 5,0 mm, and silt material smaller than 0,075 mm. The slush-compaction process is completed when the slushing water becomes clean and there is subsequently an absence of air bubbles being expelled from the layer.

The slush thus formed, shall be uniformly broomed over the surface to simultaneously correct any areas still deficient in fines, whereupon the excess fines shall be broomed from the surface of the layer. Brooming shall be done by using hand brooms, or by using mechanical rotary brooms with soft to medium stiffness bristles, or a combination of hand and mechanical brooms. Care shall be taken not to dislodge the coarse aggregate in the surface of the layer during the brooming process or otherwise disturb the aggregate mosaic.

During slushing operations, the surface must not be rolled out of shape. The slushing process shall be carried out on each short section in one continuous process, and each section shall be completed before the next section is commenced. After completion of the slushing and brooming process, when the surface of the layer is wind dry, the surface shall be given a one roller-pass with a static steel-wheeled roller. This finally embeds the surface aggregate.

The completed layer shall be firm and stable with a closely-knit surface of aggregate exposed in a mosaic pattern. The surface must have a good particle distribution without segregated areas of either excessive fines or of coarse material with a shortage of fines. The surface must be free from any lamination layers and free from corrugations. The following characteristics are indicative of a well-constructed crushed stone layer:

- Most of the coarse aggregate lies on its largest surface dimension which is the most stable orientation.
- The exposed surface of the layer, although textured, feels smooth.
- All sizes of coarse aggregate larger than 5,0 mm can be seen.
- The surface has a uniform appearance across and along the road.
- The surface has a tightly interlocked mosaic of the coarse aggregate and less than 5 % of the mosaic area has only fine aggregate visible.
- Less than 5 % breakdown of the larger particles by area.

- The dried slush broomed off the road only comprises P0,075 mm silt.
- Tapping the layer with a geological hammer produces a distinct high frequency or ringing sound.

Slush-compaction of the crushed stone base layer is mandatory and shall be carried out within 48 hours after completion of the initial compaction. Even if the specified density is achieved without slushing or before completion of the slushing process, the full slush-compaction process must still be completed.

kk) A5.3.7.12 Construction of trial sections

a) Trial sections

The trial section shall demonstrate the capability of the Contractor to construct the pavement layer or layers in accordance with the specification. The trial section shall be constructed with the same materials and equipment as those intended for use by the Contractor for the final pavement layer in the works. The surface regularity of any base layer in a trial section shall be checked for compliance.

A trial section shall be a full layer-width and at least 150 m long with a maximum length of 200 m. The minimum quantity of material to be crushed, stockpiled or hauled to site prior to the construction, testing and approval of the trial section shall be determined by the Contractor. Sufficient material should be produced or obtained from commercial sources so that the compliant material shall be representative of what will ultimately be produced for the entire project. The use of compliant material for the trial section shall not relieve the Contractor of the responsibility to produce a compliant finished layer.

The final length and width of the trial section which shall be specified in the Contract Documentation, shall be constructed in one continuous operation and shall then be submitted for approval. The Contractor shall also demonstrate the proposed method(s) to be used for making the construction joints.

The Contractor shall programme to proceed with the construction of the actual pavement layer in the works, at least 10 working days after the completion of the compliant trial section or such earlier time when testing of the trial section has been completed and the trial section has been accepted by the Engineer. In the event of a non-compliant trial section, the Engineer shall instruct the Contractor to construct a further trial section, which shall then be regarded as the initial trial section.

A non-compliant trial section shall be removed and disposed of by the Contractor at no cost to the Employer.

A compliant trial section shall be reimbursed only when it complies with all the requirements of the specification and has been accepted. The mixing process and equipment shall remain unaltered for all subsequent layer construction for which the trial section was constructed, unless otherwise instructed by the Engineer.

When the Contractor:

- changes the method of construction, or
- changes the construction equipment, or
- changes the materials, or
- changes the mix used, or
- changes the rate of paving for the construction of the layers in the works,

after the acceptance of a compliant trial section, the Engineer may instruct that a new trial section be constructed as specified in the Contract Documentation.

b) Compliant supporting layer for a trial section

The trial section for a stabilised layer, a crushed stone layer, a PMPL layer or a BM layer shall be constructed on a compliant supporting selected- or subbase layer. The supporting layer must be properly compacted to the specified density and be free from any defects.

If there are no constructed, compliant lower pavement layers ready to allow for the construction of the specific trial section at the programmed time in terms of the construction programme, the Contractor shall prepare a trial section area off the site of the works. This will enable the construction, testing and approval of a trial section to be carried out before excessive quantities of material are crushed and stockpiled.

The surface of the supporting or lower layer shall be dampened prior to placing and spreading the pavement layer material for the construction of the trial pavement layer on it.

c) Trial section for a stabilised layer

Before commencing the construction of stabilised layers the Contractor shall demonstrate by constructing a trial section that the proposed equipment and procedure to be used will result in constructing the layers in accordance with the specification.

The trial section shall be constructed in its proper position in the pavement. The stabilised material properties used for the trial section will be tested. One of the key properties shall be to establish if the agent is working as per the design. The surface finish obtained, the curing process as well as any potential stabilisation cracking, shall also be monitored and documented. Only when such a trial section has been satisfactorily constructed and accepted shall the Contractor be permitted to proceed with construction of the stabilised layer in the permanent work.

After acceptance of the trial section, the mixing process and equipment shall remain unaltered unless otherwise approved by the Engineer. **d) Trial section for a crushed stone layer**

Before commencing with the construction of any crushed stone subbase or base layer the Contractor shall construct a trial section. The following Clauses listed in Table A5.3.7-1 are applicable for the construction of this trial section.

Table A5.3.7-1: Clauses applicable to the construction of crushed stone layers

Clause	Description
A5.3.7.6	Construction of crushed stone layer
A5.3.7.7	Initial compaction of a G1 crushed stone layer
A5.3.7.8	Slush-compaction of a G1 crushed stone layer

During the construction of the trial section these Clauses shall be validated and/or modified where necessary. Any resultant modifications of these Clauses shall then be implemented during the subsequent construction of the particular crushed stone layer.

The trial section shall establish or verify the following specific aspects:

- The spacing between the off-loaded heaps of crushed stone;
- Compaction moisture content and the compaction factor;
- Compaction passes, compaction frequency and roller amplitude settings;
- The pre-shape level to allow for settlement during compaction;
- The types and method of operation of compaction equipment during slush-compaction of G1 material;
- How long the slush-compaction process shall continue until there are no more air bubbles, the expelled water is clean and movement or 'heaving' under compaction has ceased;
- Brooming equipment and the brooming process;
- Progressive development of compaction density in the layer;
- Surface finish evaluation;
- Minimum construction base width where there is no shoulder containment, to ensure that the specified density is achieved across the full travelled roadway width;
- Grading and plasticity index, post-construction; and
- Approximate drying out time until the moisture content has been reached to allow the layer to be primed.
- The surface regularity shall be checked for compliance.

A5.4 STABILISATION

PART A: SPECIFICATIONS

A5.4.1 SCOPE

This Section covers the work requirements for the treatment of the material properties of natural roadbed, fill layers or pavement layers and crushed material by stabilisation, all in terms of the definition of Stabilisation in Clause A4.4.2 of Chapter 4.

A5.4.2 DEFINITIONS

The relevant definitions in the standard specifications are applicable. Additional definitions for this Section are included here.

Mechanical modification -mechanical modification, also referred to as granular stabilisation, is a form of stabilisation as defined in Clause A4.4.2 of Chapter 4. Mechanical modification of a pavement layer involves the addition and mixing together of various materials from different sources to produce a uniformly mixed material that is compliant with the properties required for the pavement layer for which the modified material is being used.

Lamination layer - a term used to describe the layer formed when a compacted layer delaminates and forms loose and unbonded layers on top of the layer when incorrect compaction techniques are used. A colloquial term, biscuit layer, is also used for the lamination layers.

Breaking of emulsion -this term describes the process that occurs when the suspended bitumen in the emulsion separates from the water and the water evaporates, leaving behind bitumen. It is also referred to as the setting of the emulsion.

Filler a filler is a commercially available product. A filler is often a cementitious agent. The quantity added is sufficient to result in improvement of the properties of the material it is added to, but insufficient to result in the stabilisation of the material should the filler have been added in isolation.

A5.4.3 GENERAL

II) A5.4.3.1 Stabilisation agents

The type and quantity of cementitious or bituminous stabilisation agent to be used for each layer of material shall be determined as described in Clauses A4.4.7.1c) and A4.4.7.1d) of Chapter 4.

The different types of cementitious and stabilisation agents are specified in Clauses A4.4.5.2, A4.4.5.3 and A4.4.5.4 respectively of Chapter 4.

Should a non-traditional stabilising or soil treatment agent be proposed by the Contractor, it will only be considered if the requested details specified in Clause 4.4.5.4 of Chapter 4 are provided.

mm) A5.4.3.2 Work in restricted areas

Work in restricted areas is specified in Clauses A1.1.3.2 and A1.2.3.23 of Chapter 1.

Where pavement layers are to be treated or stabilised in restricted areas such as widenings, no cementitious or bituminous agent may be spread or mixed beyond the required width. The Contractor shall not be permitted to mix the material being stabilised on an adjacent paved surface.

Where restricted areas are such that mixing in the restricted area is impractical and mixing on adjacent surfaces is not permitted, mixing shall be done in a central mixing plant. In the case of small quantities, suitable portable concrete mixers may be used.

Treatment and stabilisation of layer work materials in restricted areas shall not be measured separately for payment unless specified otherwise in the Contract Documentation.

nn) A5.4.3.3 Construction limitations

The Contractor shall programme all construction work to take into account all the construction limitations which are applicable to soil treatment and stabilisation work.

a) Size of area

The cementitious and/or bituminous agent shall only be applied to a surface area the size of which will permit all processing, watering, compacting and finishing to be completed within the time periods specified in Table A5.4.3-1.

b) Processing time

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The construction methods and programme of the Contractor shall take into account and ensure compliance with the processing times specified in Table A5.4.3-1.

Table A5.4.3-1: Construction time limitations for treatment and stabilisation⁽¹⁾

Chemical agent	Maximum continuous period allowed from the time the application of the chemical agent onto the top of the layer commences up until the completion of the stabilisation process
Material modification	
Lime	10 hours. The treated layer shall subsequently remain undisturbed for 24 hours.
Material cementation	
Cement blends	6 hours until the completion of the compacted layer
Lime	10 hours until the completion of the compacted layer
Material improvement	
Bitumen emulsion	12 hours until the completion of the compacted layer
Bitumen emulsion with cement	8 hours until the completion of the compacted layer
Foamed bitumen with or without cement	10 hours until the completion of the layer
PMPL stabilised crushed stone material	
Cement blends	1 hour until the commencement of compaction plus 4 hours until the completion of the compacted layer.
Wet lean-mix concrete	150 minutes until the completion of the compacted/vibrated layer (reference temperature = 20°C This time shall be reduced by 30 minutes for every 5°C that the mix temperature exceeds 20°C

Note (1): The construction time limitations shall not exceed the field working time established during the stabilisation design in Clause A4.4.7.1 of Chapter 4.

c) Trial section approval and testing time

The construction programme and methods of the Contractor shall take into account and ensure compliance with the limitations applicable to the construction, testing and acceptance of the trial section/s as specified.

d) Weather restrictions

No stabilisation shall be done during windy conditions, wind speed more than 15 km/h (4 m/s), wet weather and cold weather when the air temperature is below 3°C or with falling air temperatures, 7°C and falling.

No stabilisation work shall be commenced if the surface temperature of a compacted stabilised layer may fall below 1°C during the first three (3) days after stabilisation. The Contractor shall take the necessary precautions and the construction programme for the stabilisation work shall take the actual and predicted weather conditions into account.

All stabilised layers damaged by rain, frost or by the formation of ice in the layer shall be removed and replaced by the Contractor at no cost to the Employer.

e) Traffic limitations

No vehicles or construction equipment except that used for mixing the stabilising agent into the layer shall be allowed to travel over the spread stabilising agent.

No traffic or construction equipment except that required for curing or priming shall be allowed to travel over the compacted stabilised layer during the specified curing period as per Clause A5.4.7.6, unless specified otherwise in the Contract Documentation.

A5.4.5 MATERIALS

oo) A5.4.5.1 General

For chemically stabilised layers the natural material or the reclaimed road material, even if previously stabilised, shall comply with the requirements of Table A4.4.5-2 in Chapter 4.

For bitumen stabilised layers the natural material or the reclaimed road material, even if previously stabilised, shall comply with the requirements in Table A4.4.5-3 in Chapter 4.

All commercial materials proposed for use by the Contractor or as specified in the Contract Documentation to be stabilised, shall comply with the requirements of Table A4.4.5-2 or Table A4.4.5-3 in Chapter 4 as applicable.

pp) A5.4.5.2 Material for modification or pretreatment

Material with non-compliant properties, such as the grading, plasticity index and/or CBR strength, that are not compliant for direct use in a stabilised layer, shall first be mechanically modified and/or chemically pretreated as specified in the Contract Documentation or as instructed by the Engineer.

The materials to be modified shall be identified in the Contract Documentation or by the Engineer during construction and shall be modified to produce compliant material before any chemical stabilisation is carried out.

a) Mechanical pretreatment of material before stabilisation

Material requiring mechanical modification to improve the grading and/or moderate the plasticity index and/or to increase the CBR strength, in order for the material to be compliant before stabilisation shall first be prepared and/or treated as specified in Section A5.3.

The mechanically modified compliant material shall then be stabilised with the type and amount of stabilising agent specified in the Contract Documentation or as instructed by the Engineer.

b) Cementitious pretreatment of material before stabilisation

Material requiring modification to reduce the plasticity index in order for the material to be compliant for subsequent stabilisation, shall first be pretreated.

The chemically pretreated, modified and now compliant material shall then be stabilised with the type and amount of cementitious stabilising agent determined as specified in the Contract Documentation or as instructed by the Engineer.

qq) A5.4.5.3 Cementitious stabilising agents

The Contract Documentation shall specify the type of cementitious agent to be used for the specific gravel or crushed stone material being chemically pretreated or stabilised. These nominal contents shall then be verified or adjusted based on the laboratory test results and/or after the construction of a trial section.

rr) A5.4.5.4 Bituminous stabilising agents

The Contract Documentation shall specify the type of bituminous agent to be used for the project for the specific gravel or crushed stone material being stabilised. These nominal contents shall then be verified or adjusted, based on the laboratory test results and/or after the construction of a trial section.

ss) A5.4.5.5 Water for stabilisation

Water for the construction of stabilised layers shall comply with the requirements of Clause A4.1.5.18 of Chapter 4.

A5.4.6 CONSTRUCTION EQUIPMENT

Construction equipment to carry out the stabilisation or modification of layer work material shall comply with the requirements of Clause A1.2.6 of Chapter 1.

When either a rotary mixer or a recycler is used to mix in the stabilising agent and process the layer, this construction equipment must be capable of adding variable but precise amounts of water, and then mixing and placing the material in a single pass in conformance with the design grades and cross falls.

Where specified in the Contract Documentation, the watering for the curing of compacted stabilised layers shall be done by side-spraying tankers travelling off the layer.

A5.4.7 EXECUTION OF THE WORKS

tt) A5.4.7.1 Construction of a trial section

The Contractor shall demonstrate by constructing one or more of the following trial sections that the equipment and procedure to be used will result in the construction of layers in accordance with the specifications. The required trial section(s) shall be in accord with the pricing schedule.

- A trial section for the chemical modification or stabilisation of a layer of material processed on the road shall be constructed in accordance with the relevant requirements of Clauses A5.3.7.12 and A5.4.7 and/or as specified in the Contract Documentation.
- A trial section for the bituminous stabilisation of a layer of material processed on the road shall be constructed in accordance with the requirements of Clauses A5.3.7 and A5.5.7 and/or as specified in the Contract Documentation.
- A trial section for the cementitious stabilisation of PMPL materials shall be constructed in accordance with the requirements of Clause A5.3.7 and/or as specified in the Contract Documentation.

To allow sufficient time to test and assess all aspects of a trial section(s) and to determine the final content of stabilising agent required, the Contractor shall programme to start stabilisation work for the works no sooner than 10 working days after completion of the trial section.

Should the Contractor make any alterations to the methods, processes, equipment or materials used, or if the Contractor is unable to consistently comply with the specifications due to variations in the in-situ material, or for any other reason, further trial sections shall be constructed for assessment before continuing with the construction of the permanent works as instructed by the Engineer.

In the event of a trial section not being accepted due to non-compliance, the Contractor shall remove the trial section and construct a new trial section at no cost to the Employer. The trial section shall be paid for separately only when it complies with all the requirements of these specifications and has been accepted. Once acceptance of the trial section has been obtained, the mixing process and construction equipment shall remain unaltered unless instructed otherwise by the Engineer.

uu) A5.4.7.2 Mechanical modification of pavement layer material

The specific layer material requiring to be mechanically modified shall be specified in the Contract Documentation or instructed by the Engineer.

When two or perhaps three different pavement layer materials need to be blended in order to provide a compliant composite material the proportion of each material type shall be specified based on the test results obtained from site blending trials.

a) Mixing materials from various sources in-situ

This Clause for mixing materials from various sources shall only apply when the smallest component of the materials mixture exceeds 20 % of the total mass of the mixture.

The material from the coarsest material source shall be placed onto the road at the point of use and spread in a layer of uniform thickness after which it shall be lightly rolled with a steel-wheeled roller. The material from the second and possibly third material source shall then be placed on top of the spread layer and then evenly spread on top in a layer of uniform thickness. After spreading each subsequent layer, each layer shall be lightly rolled with a steel-wheeled roller. After evenly spreading the different materials on top of each other, the materials shall be thoroughly mixed together, broken down if required and then spread evenly again to the required thickness.

The Contractor shall take care to avoid segregation from occurring during the mixing and spreading processes. The grading of the mixed material shall then be tested at random locations as instructed by the Engineer and further mixing shall be required if grading tests indicate that the material is not mixed sufficiently.

The finally mixed material shall also be tested for compliance with the specification of all the material

properties for use in the specific layer. **b) Modifying material in-situ by the addition of a soil binder**

When the smallest component is less or equal to 20 % of the total mass of the mixture then the process shall be regarded as the addition of a soil binder. The addition of the soil binder may be required to modify the grading or to reduce the plasticity index.

The material to be modified shall be placed onto the road at the point of use and evenly spread in a layer of uniform thickness after which it shall be lightly rolled with a steel-wheeled roller. The specified soil binder material shall then be placed on top of the evenly spread material and then evenly spread in a layer of uniform

thickness over the first layer of spread material. The soil binder and material shall be thoroughly mixed together, broken down if required and then spread evenly to the required thickness.

The grading and plasticity index of the mixed material shall then be tested at random locations as instructed by the Engineer and the modified material shall be tested for compliance with the specification for use in the specific layer.

vv) A5.4.7.3 Chemical pretreatment and stabilisation

The material to be stabilised or pretreated shall be prepared and placed as specified in Section A5.3. The surface of the prepared layer shall then be lightly watered until it is damp and given at least one pass with a flat wheel or steel tyre roller.

a) Applying the cementitious agent mechanically

After the layer of material has been prepared, the cementitious agent shall be spread uniformly over the full area of the layer by means of an approved type of mechanical bulk spreader at the prescribed rate of application in a continuous process.

When the mechanical application of the cementitious agent is clearly uneven in places it shall be evenly respread using squeegees where required so that it is uniformly spread over the entire surface to be stabilised before mixing may commence.

A recycler may be used to mechanically apply the cementitious agent through an on-board automatic dispensing system. Adjacent cuts of the recycler shall overlap by at least 150 mm. Over application of either moisture or cementitious agent in the overlap shall not exceed 10 % of the average requirement for the layer.

b) Applying the cementitious agent by hand

When spreading of the cementitious agent is done by hand, pockets or bags of cementitious agent shall be accurately packed out and spaced at equal intervals across the full area of the section to be stabilised so that the specified rate of application will be achieved. Spreading shall only commence once it has been confirmed by the Engineer that the correct quantity of cementitious agent has been placed on the layer by physically counting the number of pockets and checking the spacing of the pockets.

The even spreading of the hand spaced and packed cementitious agent may further be done by hand using squeegees, provided that the wind speed is less than 15 km/h (4 m/s). Irrespective of the spreading method used the cementitious agent shall be uniformly spread over the entire surface to be treated.

c) Mixing in the cementitious agent using conventional equipment

Immediately after the cementitious agent has been evenly spread, it shall be mixed with the layer material for the full depth of treatment. The completed layer underneath shall not be damaged, nor shall the cementitious agent be mixed below the required depth. Mixing shall be continued until a homogeneous mix of the material and the cementitious agent has been achieved over the full area and depth of the material being pretreated or stabilised.

Mixing shall be done using a combination of a grader, disc harrow and/or rotary mixer or by using a recycler, working over the full area and depth of the layer by means of successive passes of the construction equipment as applicable. When a recycler is used in isolation, cross-mixing is often inadequate and additional mixing plant shall then be utilised in conjunction with the recycler to ensure thorough cross-mixing. Mixing may also be done in a central batch-mixing plant if the Contractor so chooses.

After completion of the mixing process the mixed material shall be spread and shaped.

If the material is being pretreated, the shaped layer shall be given at least one pass with a flat wheel or steel tyre roller and left undisturbed for the time period as specified in Table A5.4.3-1. After the specified time period, the chemically modified layer may then be stabilised in accordance with Section A5.4 if the material is now compliant for stabilisation or processed and compacted as an unstabilised layer in accordance with Section A5.3.

d) Watering and mixing in of water for stabilisation using conventional equipment

Moisture content tests shall be done the day before the stabilising agent is to be added to the material in order to determine the amount of water that must be added to bring the moisture content up to the required compaction moisture content. If there is any rain after the moisture content test samples were collected additional tests shall be done.

Immediately after the cementitious agent for stabilisation has been properly mixed with the material, the required amount of compaction water shall be added incrementally. Each application of water shall be thoroughly mixed with the material before more water is added so as to avoid a concentration of water near the surface or the flow of water across the surface of the layer.

The Contractor shall ensure that a satisfactory and even moisture distribution is achieved over the full depth, width and length of the section being stabilised and shall ensure that no portion of the work gets excessively wet after the cementitious stabilising agent has been added. Any portion of the work that becomes too wet after the

stabilising agent has been added and before the mixture has been compacted, due to poor construction control or disregard for the specified weather limitations or for any other specified requirement that has not been complied with, shall be rejected. Such portions shall be allowed to dry out to the required moisture content and shall then be scarified, re-stabilised using additional agent, compacted and finished off in accordance with the specification, all at no cost to the Employer.

The water supply and watering equipment shall be adequate and sufficient to ensure that all the water required shall be added and mixed with the material within a short enough period to enable compaction and finishing to be completed within the period specified in Table A5.4.3-1.

The moisture content of the material during compaction shall never exceed 80 % of the saturation moisture content of the natural material without a stabilising agent.

The moisture content at the specified saturation degree (Sr) shall be determined as follows:

$$W_v = S_r \{X_w/X_d - 1000/G_s\}$$

W_v = moisture content of the specified degree
of saturation (%)

X_w = density of water (kg/m^3)

X_d = dry field density of the material (kg/m^3)

G_s = apparent density of the material (kg/m^3)

S_r = specified degree of saturation (%).

e) Applying and mixing in the cementitious agent using a recycler

When the cementitious agent is applied by hand the requirements of Clause A5.4.7.2b) remain applicable.

The requirements of proper moisture control specified in Clause A5.4.7.2d) remain applicable.

The recycler shall be capable of applying the agent and mixing to the required depth in a single pass. The recycler shall be equipped with an onboard automatic spraying system that can accurately apply a specific metered quantity of water over the full width of the milling drum. Electronic sensors shall be fitted to maintain the milling/mixing depth within a tolerance of 5,0 mm.

The speed of rotation of the milling drum and the forward speed of the machine shall be adjustable to obtain a material that is evenly mixed with the cementitious agent. The outer edges of the recycler cut shall be vertical and the floor of the cut shall be clean and to the lines specified in the Contract Documentation. The width of application shall be the same as the cut-width of the recycler.

The recycler shall be required to simultaneously add the required amount of water and mix the cementitious agent to produce an approved uniform mix.

f) Compaction of a chemically stabilised layer

Section A5.3 shall apply to the compaction of chemically stabilised layers.

During the compaction process the Contractor shall ensure that no lamination layers or biscuit layers are formed within the compacted layer. Final rolling shall be done with equipment that will give a smooth surface finish which conforms to the surface tolerances specified. Low spots on the surface of a chemically stabilised layer may not be filled after compaction.

When a recycler has been used to mix the layer material Contractor shall ensure that the mixed material between the wheel paths of the recycler is compacted to at least the same density as the material in the wheel paths, before commencing with the cutting of levels.

The minimum compaction requirements shall be as specified for the particular layer. Sufficient compaction equipment shall be employed on each layer to ensure that, from the time when the stabilising agent is first mixed into the layer, the mixing process, watering, compacting, shaping and final finishing will be completed within the time periods specified in Table A5.4.3-1.

ww) A5.4.7.4 Bituminous stabilisation

a) In-situ mixing for stabilisation

The material to be stabilised with bitumen shall be prepared and placed as specified in Section A5.3.

(i) Addition of the cementitious agent

If a cementitious agent is specified as part of the bituminous stabilisation process then it shall be evenly spread over the layer surface (Clause A5.4.7.2) before the bitumen stabilisation process commences.

When using standard construction equipment such as a grader along with a plough / rotovator, the Contractor shall pre-mix the cementitious agent into the layer as specified (Clause A5.4.7.2) before the compaction moisture and the bituminous stabilising agent is added and mixed in.

When using a recycler, the cementitious agent shall be mixed in at the same time as the compaction moisture and the bituminous stabilising agent is being added.

(ii) Heating and diluting the bituminous stabilising agent

The bituminous stabilising agent shall be heated to the required temperature as specified by the supplier.

If dilution of the bitumen emulsion stabilising agent with water is required, only potable water shall be used. The water shall be added gradually during constant stirring or circulation of the emulsion by means of pumps to prevent the emulsion from separating or breaking.

(iii) Apply and mix in the bituminous stabilising agent

The bituminous stabilising agent (foamed bitumen or bitumen emulsion) may be applied and mixed into the material using an

approved in-situ recycling machine as specified in Section A5.5.

When a bituminous emulsion stabilising agent is being used it can be applied using a calibrated spray tanker with a spray bar, followed immediately behind ahead of it being mixed into the material using a grader and a rotovator.

The quantity of material being stabilised with a bituminous stabilising agent must be restricted to the amount that can be properly mixed with the available equipment before the bitumen emulsion breaks.

b) Remote mixing for stabilisation

Where in-situ mixing and stabilisation is not possible due to a confined working area or inadequate turning space for the construction equipment, then remote off-site mixing may take place.

(i) Remote site and material preparation

An appropriate site shall be prepared in accord with Section A4.1 of Chapter 4 in the same way a stockpile site is specified to be prepared.

Place and spread the material on the prepared remote site to a thickness of approximately 300 mm. Place and spread the cementitious agent as specified in Clause A5.4.7.2 and proceed to mix using appropriate construction equipment such as a grader, or an articulated loader, or a rotovator.

(ii) Adding the bituminous stabilising agent

Apply the bituminous stabilising agent, heated and/or diluted as specified, using a hand sprayer and then mix the material further.

Once the material has been thoroughly mixed it shall be loaded, hauled, placed and then processed at its point of use, as specified in Sections A5.3 and A5.4.

xx) A5.4.7.7 Protection and curing of chemically stabilised layers

All stabilised layers shall be protected against rapid drying-out for at least seven days following completion of the layer.

This can be achieved by the frequent application of water for 7 days or by water curing followed by covering with the next layer or by water curing followed by the application of an approved curing membrane. The use of single-axle trucks with a maximum axle load of 6t shall be used to apply the chosen curing compound.

The specific method of protection or curing used may be any one of the methods as specified hereunder or as stipulated in the Contract Documentation.

a) Water curing

The stabilised layer shall be kept continuously wet by watering at frequent intervals for an initial period of 48 hours after the compaction of the stabilised layer has been completed. The stabilised layer shall thereafter be kept continuously damp for at least a further five days.

Any stabilised layer which is not kept continuously wet or damp for at least seven (7) days, and is by default therefore subjected to consecutive wet-dry cycles, may be rejected if the layer exhibits shrinkage cracking or any carbonation.

b) Damp protective layer curing

The stabilised layer shall first be cured for 48 hours as specified in Clause A5.4.7.7a).

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The stabilised layer shall then be covered with the material required for the next layer. The covering material shall be placed using only singleaxle trucks with a maximum axle load of 6t and then immediately spreading the material. The layer material shall not be compacted. Water curing of the still exposed portions of the stabilised layer shall continue while the curing layer is dumped and spread.

The material forming the spread layer shall be watered at such intervals as may be required to keep the stabilised layer continuously damp until it has been cured for at least 7 days. In dry weather the spread layer shall be well watered at least once every 24 hours and even more often in hot or windy weather conditions.

c) Membrane curing

The chemically stabilised layer shall be covered with a curing membrane consisting of spray-grade bitumen emulsion or cutback bitumen applied at the rate specified in the Contract Documentation immediately after stabilisation.

d) Prime coat curing

Where a prime coat is specified on top of any stabilised layer, the prime coat may be utilized as a curing membrane and it shall be applied at the rate specified in the Contract Documentation. Use of the prime coat as a curing membrane may only be applied provided the surface moisture is only slightly damp and not wet.

If the prime coat is utilised as a curing membrane for a stabilised base layer, payment shall only be made once for the prime coat and no additional payment will be made for providing a curing membrane.

A5.5 RECONSTRUCTION OF PAVEMENT LAYERS

PART A: SPECIFICATIONS

A5.5.1 SCOPE

This Section covers the work requirements for the reconstruction of existing road pavement layers. This comprises patching and in-situ reconstruction.

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A5.5.1.1 Patching

Patching covers the work requirements for the patching of existing pavement layers, and in exceptional cases patching fills and the roadbed, with the purpose of repairing local failures. Patching involves excavating the existing failed sections to the specified depth and area, removing the excavated material and reconstructing the excavated fills and pavement layers with the specified material.

Patching specified in this Section A5.5 is applicable when the project scope of works is predominantly the reconstruction of Pavement Layers.

Patching specified in Section A8.8 is applicable when the project scope of works is predominantly the construction of Asphalt Layers.

This scope also covers the work requirements for the repair of edge breaks.

Resurfacing the repaired failed area does not form part of this scope and is provided for in Chapters 8 and 9.

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A5.5.1.2 In-situ reconstruction

In-situ reconstruction covers the work requirements for the process using either conventional construction equipment exclusively or a customdesigned recycling machine (recycler) along with some conventional construction equipment, to reconstruct pavement layers.

A5.5.2 DEFINITIONS

The relevant definitions in the standard specification are applicable. Additional definitions for this Section are included here.

Conventional equipment - this is equipment that is normally used for the construction of the Works. This equipment excludes equipment specifically designed and used for in-situ reconstruction works and/or for the recycling of materials.

Cross-mixing -this is the mixing of layer materials horizontally across a layer width when the material properties of the layer are not the same throughout the width and the depth of the layer. Cross-mixing cannot be carried out using a recycler.

Edge break -an edge break is a defect in which the outer edge of the wearing course and part of the underlying pavement layer (asphalt or crushed stone or gravel) is broken and/or worn away resulting in an irregular road edge line with an average defect width of 250 mm or less. Edge breaks wider than 250 mm are defined as patching.

In-situ -this means in the actual original or final location without moving the material elsewhere.

Patching -means the repair of failures in fill and/or pavement layers when the failed width is less than 1,0 m or the failed length is less than 25 m or the failed area is less than 100 m². Patching does not include the pretreatment of a surfacing, or the repair/patching of surfacing defects, or the rehabilitation of a concrete pavement which is covered in Chapters 8 (pretreatment), 8 (surface defects) or 7 (repair of concrete).

Reconstruction -this is the reconstruction of existing pavement layer material (in-situ or reclaimed material) with or without stabilisation. Reconstruction in several construction phases can be accomplished using conventional construction equipment to reclaim and reconstruct layer work material or in a single construction phase using a recycler along with some conventional construction equipment to achieve the reclaiming and reconstruction of layer work material.

Rehabilitation -this is the restoration of an existing deteriorated or failed road pavement either to the original constructed condition or to a better condition. The restoration of the road pavement can take place by patching, by layer reconstruction, by adding layers or a combination of the aforementioned as specified in the Contract Documentation.

Recording pass -this is the roller-pass when the roller's compactometer readings are recorded, cross-referenced to a location and compared with the specified layer density requirements. A recording pass is only made on the second roller-pass over the same area. A recording pass comprises two passes with the roller.

Slushing -the process of wetting the surface of a compacted layer accompanied by rolling with a smooth-drum roller and/or a pneumatic tyre roller to generate saturated fine material or slush, on the upper surface of the compacted layer.

Uniform pavement section -a uniform pavement section has pavement layers with similar layer materials, similar layer properties, similar layer thicknesses and similar deflection responses (when available) throughout the section. Uniform pavement sections shall be clearly identified in the Contract Documentation.

A5.5.3 GENERAL

aaa) A5.5.3.1 Traffic accommodation

The traffic accommodation arrangements required during the reconstruction of existing roadworks in urban and rural areas are specified in Chapter 1 of the specifications.

The works-specific details shall be specified in the Contract Documentation.

bbb) A5.5.3.2 Material selection

The reclaimed material specifications in this Section are supplementary to the material specifications of Chapter 4. Reclaimed material from existing pavements shall be utilised as specified in the Contract Documentation.

All reclaimed material from existing pavements, or reconstructed in-situ, shall be broken down and oversize material removed, to comply with the maximum size and grading requirements for the particular use of the reclaimed material as specified in the Contract Documentation.

The classes of excavation for reclaimed material shall be as specified in Section A4.3 of Chapter 4.

ccc) A5.5.3.3 Construction requirements

The processing, compaction, stabilisation, finishing and protection requirements of the in-situ material or reclaimed material as specified in Sections A5.1 to A5.5 shall apply to the construction of reclaimed material and to the reconstruction of in-situ pavement layers.

In addition, the processing and compaction of materials for patching shall also be carried out as specified in the relevant Sections of Chapter 5.

ddd) A5.5.3.4 Existing bituminous seal and/or asphalt layers

Thin bituminous seal surfacing layers are usually processed together with the underlying pavement layer or layers which are being reclaimed or reconstructed in-situ, unless the complete removal thereof is specified in the Contract Documentation.

Asphalt surfacing and/or asphalt base layers may be reclaimed by milling off to stockpile as specified in Clauses A4.3.7.4 to A4.3.7.6 or they may be reconstructed in-situ, together with the underlying pavement layer(s).

Bituminous seal surfacing or asphalt base and/or surfacing layers which are processed together with the underlying gravel or crushed stone pavement layer/s shall be properly broken down by the milling and reconstruction process and mixed thoroughly with the underlying material and to the depth as specified in the Contract Documentation. Any remaining fragments of the bituminous seal surfacing or asphalt material which exceed the specified maximum particle size of the pavement layer being reprocessed shall be broken down or removed as oversize material.

eee) A5.5.3.5 Reconstructing existing pavement layer materials

Where the existing pavement material is to be reconstructed in-situ as base, the exposed surface shall be cleaned by removing all remaining fragments of asphalt material. No more than 15 % of the exposed surface area shall still be covered but with a reduced thickness of no more than 10 mm of asphalt material.

The existing pavement material shall be broken down to the full depth and then reconstructed in-situ, as specified in the Contract Documentation

fff) A5.5.3.6 In-situ reconstruction near existing road infrastructure

Care shall be exercised to avoid damage to any concrete elements, expansion joints, joint nosings, manholes, kerbing, catch pits and any other roadside furniture during reconstruction of the layers. Damage caused to any element forming part of the permanent works shall be repaired at no cost to the Employer.

ggg) A5.5.3.7 Exposed pavement layer

The exposed surface of the in-situ layer left after a pavement layer has been excavated, shall be inspected once the exposed surface has been cleaned of all loose material by sweeping, or blowing with compressed air or by vacuuming.

Irrespective of whether the exposed layer is an unstabilised layer or a stabilised layer the cleaned floor of the excavation shall be inspected for any failed areas and for cracks of any form by the Contractor along with the Engineer.

hhh) A5.5.3.8 Widening an existing pavement

Where existing roads need to be widened, the existing pavement layers shall be cut back to a firm, well-compacted or cemented material ahead of the commencement of any widening activities. The cut back

material may be used together with imported material in the widening process as specified in the Contract Documentation.

Where pavement layers are widened, then the different existing pavement layers shall be excavated in steps or benches as specified in Clause A5.3.3.7.

If there is a restricted working space caused by the widening of an existing pavement over a narrow width, the Contractor shall ensure that all material complies with the specified maximum aggregate sizes before the material is brought into the restricted working space. No further breaking down on the road shall be permitted within the restricted working space unless the Contractor can demonstrate that the oversize material can be broken down or removed successfully without compromising the safety of workers or members of the public using the adjacent road.

A5.5.5 MATERIALS

The Contractor shall ensure that reclaimed material complies with the specified requirements of Chapter 4 prior to use in the particular pavement layer.

Further specifications for patching of existing road pavement layers and for the processing and compaction of existing road pavement layer materials using a recycler, are contained in this Section A5.5.

iii) A5.5.5.1 Existing crushed stone pavement materials

Where existing crushed stone material is to be reconstructed, the Contract Documentation shall specify whether the material shall be processed as a gravel layer or as a crushed stone layer.

The compaction requirements specified in Table A5.3.5-2 shall apply to crushed stone layers constructed from reclaimed or in-situ reconstructed material unless specified otherwise in the Contract Documentation.

jjj) A5.5.5.3 Imported materials for patching

The imported materials used for patching shall comply with the material specifications of Section A4.1 of Chapter 4 for the specific layer being reconstructed in the patch.

kkk) A5.5.5.4 Compaction density

The density of the reconstructed layer shall be measured in terms of the MDD of the layer.

The minimum compaction density for reconstructed pavement layers shall be as specified in Table A5.5.5-1.

Table A5.5.5-1: Minimum compaction density for reconstructed material

Reconstructed material type	Compaction as % of maximum dry density (MDD)	
	Cementitious stabilisation	Bituminous stabilisation
Natural gravel	as per Table A5.3.5-1	100
Graded crushed stone	as per Table A5.3.5-2	102

III) A5.5.5.5 Material shortfall and make-up material

Where there is a shortfall of material for the reconstruction of a layer or layers, this shortfall shall be imported from compliant material prepared in accord with the specification in Chapter 4 from stockpile or from commercial sources as specified in the Contract Documentation. The shortfall of material may be due to the poor shape of the road pavement or due to poor levels or to a deficient as-built layer thickness.

The grading and other properties of the in-situ material blended with the imported material shall be determined. Where the grading of this layer to be reconstructed is not compliant either in-situ, or after being milled, or after being ripped and broken down, then make-up material shall be imported and blended with the in-situ material so that the combined grading and other material properties of the in-situ reconstructed layer shall be as specified.

Nowhere shall the thickness of imported material exceed two thirds of the depth of reconstruction.

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A5.5.7.6 Reconstruction trial section

The Contractor shall construct an in-situ reconstruction trial section for each uniform section of pavement using the approved mix design determined in accordance with the specifications in Clause A4.4.7 of Chapter 4. The uniform sections shall be as specified in the Contract Documentation.

The Engineer may waive the need for a trial section for each uniform section, when the approved mix design and material types are similar for each uniform section.

The Contractor shall follow the in-situ reconstruction process specified in Clause A5.5.7.3.

Prior to constructing the reconstruction trial section the Contractor shall assemble all items of construction equipment proposed to be used for the trial section. Only the construction equipment items (conventional or recycler) that the Contractor intends using for production work shall be used to construct the trial section and under no circumstances shall any substitutes be permitted.

The objectives of the trial section are as follows:

- To demonstrate that the construction equipment and the proposed process will enable the construction of the reconstructed layer in accordance with the specified requirements in the Contract Documentation.
- To determine the effect on the grading of the reconstructed material by varying the advance speed of the recycler and the rate of rotation of the milling drum.
- To determine how many roller-passes are required to achieve the specified relative compaction density.
- To confirm the finishing process methodology and confirm the required surface finish standard.
- To check the surface regularity of the base layer for compliance with Clause A5.3.8.5a).
- To determine the bulking factor of the reconstructed material, the size of the working windrow and the amount of material to be removed after construction

A trial section shall be at least 150 m in length with a maximum of 200 m in length and shall cover the full lane width or partial road width in accordance with the geometry of the road and the accepted work plan.

If the Contractor makes any alterations in the methods, processes, equipment or materials used, or is unable to consistently comply with the specifications due to variations in the in-situ material or for any other reason, the construction of another trial section shall be required. If the first trial section proves to be non-compliant a second trial section shall be constructed. The non-compliant first trial section shall be at no cost to the Employer.

Reconstruction work may only commence once a trial section has been evaluated and certified compliant for a particular uniform pavement section. Thereafter, it is the responsibility of the Contractor to obtain the necessary approval for the relevant mix design and any alterations to the mix design that may be necessary for each uniform section ahead of the commencement of the reconstruction work.

To allow sufficient time to assess all aspects of the quality of the completed trial section and to ensure that the test results are compliant, the Contractor shall programme to start the in-situ reconstruction work no sooner than 7 calendar days after constructing the trial section. The Contractor shall have no claim for any programme delay caused by the construction of trial sections for whatever reason and the time required to construct, test and approve the trial sections shall be allowed for in the approved construction programme.

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A5.5.7.7 Curing reconstructed layers

The curing of chemically stabilised layers shall take place as specified in Clause A5.4.7.

No curing treatment is required for a bitumen stabilised layer when the layer has been slushed with a diluted bitumen emulsion.

A5.5.8 WORKMANSHIP

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A5.5.8.1 Inspection of the works

The Engineer shall do routine inspections and conduct routine tests to determine whether the quality of material and workmanship provided, complies with the requirements of the Contract Documentation.

Any reconstructed layer with lamination layers or biscuit layers, as identified by the hollow sound caused when a heavy chain is dragged over the compacted layer or when the layer is tapped with a geological hammer shall be rejected. The material in the rejected sections of the completed layer shall be reconstructed in accord with the specifications or in accord with instruction from the Engineer. The layer shall be reconstructed prior to the construction of any subsequent layers at no cost to the Employer.

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A5.5.8.2 Material quality and compaction requirements

The test results and measurements will be assessed in accordance with the provisions of Chapter 20: Quality Assurance.

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A5.5.8.3 Construction tolerances for pavement layers

The individual reconstructed pavement layers shall comply with the construction tolerances for the appropriate layer as specified in Clause A5.3.8.4. The surface regularity of a reconstructed base layer shall comply with the requirements of Clause A5.3.8.5a).

When a pavement layer of material is processed directly on top of a milled excavation floor (Clause A5.5.3.6), without the requirement that the milled excavated floor first be trimmed to prescribed levels, the thickness tolerances shall not apply to the processed pavement layer on top provided the compacted thickness of the layer on top is not less than 130 mm thick.

The final surface on any particular point on patches or between the patch and existing surface shall not deviate more than 5,0 mm from the bottom of a 3,0 m long straight edge. The surface of the base layer of the patch shall match this tolerance taking into account that the maximum deviation shall be 5,0 mm plus the proposed surfacing thickness.

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A5.5.8.4 Material testing for reconstructed layer

Sample preparation and testing for bitumen stabilisation sampling and testing shall be in accordance with the latest edition of TG2.

The stabilised material sampled from the layer for the compaction of MDD briquettes, shall be prepared according to SANS 3001-GR54 and compacted according to SANS 3001-GR31.

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A5.5.8.5 Reconstructed layer process control

The Contractor shall establish a comprehensive process control system for the reconstruction work. This shall consist of a system of daily reports submitted to the Engineer.

a) Pre-

reconstruction report This

report shall comprise the following:

- The production and cut plans.
- The completed pre-start check list.
- Weather conditions and temperature measurements.

b) Post-reconstruction report

This report shall comprise the details of the reconstruction work completed during a single-operation with the following information for each reconstruction cut (for a recycler) or reconstruction width (for conventional construction equipment):

- Start and end km value.
 - Width and depth of cut including a schedule of dip measurements.
 - Width of application of each stabilising agent.
 - Nozzle settings and closures for each relevant spray bar.
 - Computer data input.
 - Number of primary compaction recording passes made.
 - Primary compaction process control density records.
 - Compaction data (including compactometer reading, vibration amplitude, advance speed of roller) in electronic format from the integrated compactometer device fitted to the primary roller when applicable, at 2,0 m intervals.
- ##### **c) Stabilising agent report**

This report shall comprise details of the actual usage of stabilisation agent.

- Chemical stabilising agent spreading check measurements.

- Bitumen emulsion consumption.
- Straight bitumen consumption.
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- Average temperature and pressure measured at the bitumen spray bar.
- All other details shown in the sample report included in the appendices of the latest edition of TG2. **d)**

Site diary report

This report shall comprise relevant information specifically concerning the reconstruction operation. These shall include but shall not be limited to:

- Stoppage time and cause.
- Sections where in-situ pavement conditions changed from the documented uniform pavement section together with a description of the change.
- Details of any non-routine tests undertaken.
- Any changes in the weather during the day.
- All site instructions received.
- The sampling location of the daily samples of pulverised or broken down material.

A8.1 PRIME COAT

PART A: SPECIFICATIONS

uuu) A8.1.1 SCOPE

This Section covers the work in connection with the application of a prime coat.

vvv) A8.1.2 DEFINITIONS

Prime coat - consists of a low viscosity bituminous binder, applied in a single application on a granular, cemented or treated base or subbase to facilitate a good bond between the base and the bituminous surfacing or subbase and bitumen treated base.

www) A8.1.3 GENERAL

(1) A8.1.3.1 Weather limitations

No prime shall be applied under the following adverse conditions:

- During foggy or wet conditions;
- When rain is imminent;
- When wind is blowing sufficiently hard to cause uneven spraying;
- When the surface of the layer is visibly wet, i.e. more than damp;
- When the temperature of the surface immediately prior to commencing with the application of the prime is below, or in the opinion of the Engineer, likely to fall below 10°C;
- After sunset;
- When at any position within the layer the moisture content of a granular base layer is more than 50 % of the optimum moisture content determined according to SANS 3001 No GR30. In the event of rain after priming, the base shall be allowed to dry out to meet the above moisture content requirements prior to surfacing. Limiting moisture contents for treated layers before priming shall be specified in the Contract Documentation.

(2) A8.1.3.2 Nominal rate of prime coat application

The nominal rate of application, for tender purposes, shall be 0,8 l/m².

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A8.1.5 MATERIALS

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A8.1.5.1 Bituminous material

The priming material shall be one of the following as specified in Part C: Measurement and Payment:

Table A8.1.5-1: Bituminous binder for priming the excavated area

Bituminous binder for priming the excavated area	Specification
MC-10 cut-back bitumen	SANS 4001 – BT2
MC-30 cut-back bitumen	SANS 4001 – BT2
Inverted bitumen emulsion	SANS 4001 – BT5
Other appropriate product containing solvents	Certified by independent certification agency
Other appropriate product containing no solvents	Certified by independent certification agency

The type of prime and application rate best suited for the base shall be determined after construction of the base. The Contractor shall provide about 20 ℓ of at least three prime products and apply it at different application rates with a brush on the base. The Engineer shall evaluate the performance of the prime in accordance with the latest version of TRH1/SABITA Manual 26 and then instruct the type of prime and application rate to be applied. No payment shall be made for tests to determine the appropriate priming product.

(2)

A8.1.5.2 Aggregate for blinding primed layers

Where so instructed, blinding material shall consist of crusher sand or natural sand, with 100 % passing the 7,1 mm sieve and not more than 10 % passing the 2,0 mm sieve. The aggregate shall be clean, hard and free from excessive dust and shall contain no clay, loam or other deleterious matter.

Blinding of the primed surface with such aggregate at a nominal rate of 285 m²/m³ shall only be permitted to facilitate traffic accommodation or access arrangements.

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A8.1.7 EXECUTION OF THE WORKS

(1)

A8.1.7.1 Preparation of the layer to be primed

Not longer than 24 hours before spraying, the layer to be primed shall be broomed and cleaned of all loose or deleterious material by means of a controlled rotary broom and/or hand brooms. Sweeping shall be done carefully so as not to cause any damage to the layer. A light spray of water, sufficient to dampen the surface, shall be uniformly applied to the layer immediately before the application of the prime. If the water is over applied, resulting in standing water, the layer shall be allowed to dry until a uniform damp surface is obtained. Before any priming material is sprayed, the layer to be primed shall be checked for conformance with the surface and other requirements specified.

(2)

A8.1.7.2 Storage and application of the prime coat

The temperatures for storage and spraying shall be in accordance with the relevant SANS 4001 specifications or be in accordance with the manufacturer's specifications or as required by a product's certification documentation.

All prime materials stored in a heated condition shall be stored in a tank with a properly functioning circulation system and having a securely fitting lid.

All layers where the application of a prime is specified or ordered shall be primed using a mechanical distributor complying with Clause A10.1.6.1 of Chapter 10. The edges of the previously constructed or existing surfacing shall be adequately protected by approved means to ensure that an overlap of prime not exceeding 50 mm is achieved.

A mat of reinforced paper or other suitable approved material shall be used at all joints at the beginning and end of all sprays to obtain a neat start and cut-off.

If the prime is applied in more than one strip, allowance shall be made for overlapping of strips by 200 mm, in accordance with the triple spray flair configuration, to ensure a full application of the prime over the joint.

Unless directed otherwise by the Engineer or indicated on the drawings, the edges of the primed surface shall be 200 mm wider than the edges of the surfacing. The edges of the primed surface shall be true to line with a maximum deviation of 25 mm from the specified edge line.

Wherever feasible, the prime shall be applied in one or more lanes evenly over the full width of the road and allowed to penetrate and cure until traffic can pass over the surface without any pickup. All traffic shall be kept off the surface until this condition is obtained.

Where it is not feasible for traffic to use diversions, the prime shall be applied and allowed to penetrate for as long as is practicable before a blinding layer of aggregate is applied at a nominal rate of 285 m²/m³. Care shall be exercised in this operation to avoid the aggregate being applied too soon after spraying the prime. Any "caking" of aggregate which may take place and cause problems during the surfacing process and all loose aggregate shall be removed before the final surfacing is applied.

Where it is not possible to construct such ancillary works after priming, care shall be taken to protect all kerbing, channeling and guard rails from the prime by covering them with suitable protective material when spraying. The Contractor shall, at his own cost, replace all soiled items. Painting of the soiled surfaces shall not be accepted as a suitable remedial measure.

(3) A8.1.7.3 Areas inaccessible to mechanical equipment

The provisions of Clause A10.1.3.3 of Chapter 10 shall apply to the application of the prime in areas inaccessible to mechanical equipment. The prime shall be applied by means of a portable binder distributor that complies with the requirements of Clause A10.1.6.1 of Chapter 10. The quantity of prime applied shall be controlled so that the specified rate of application is achieved. Surplus prime shall be removed as specified in Clause A8.1.7.4.

(4)

(5) A8.1.7.4 Removal of surplus prime

After the prime has penetrated sufficiently, surplus prime shall be covered with damp crusher sand, which shall be worked into it by means of hand brooms to absorb the surplus prime. As soon as it is saturated with prime, the crusher sand shall be swept off the primed surface and the area allowed to dry before surfacing. The process shall be repeated until no surplus prime or wet prime remains on the surface.

(6) A8.1.7.5 Opening to traffic

Where a blinding layer is specified in the drawings or directed by the Engineer, and applied to the primed surface, the Contractor shall maintain the blinding layer and the primed surface during the period when the surface is opened to traffic and shall repair all damage caused to the surface by such traffic, as directed by the Engineer, at no additional payment.

Traffic accommodation shall comply with the specifications in Section A1.5 of Chapter 1.

zzz) A8.1.8 WORKMANSHIP

(1) A8.1.8.1 Tolerances

The actual spray rates measured at spraying temperature shall not deviate by more than 8,0 % from that ordered by the Engineer. The Engineer may conditionally accept application rates falling outside this tolerance at reduced payment in accordance with Table A8.1.8-1. Conditional acceptance shall not relieve the Contractor of his contractual obligations.

(2) A8.1.8.2 Testing

The Contractor shall give the Engineer at least 24 hours' notice of his intention to spray prime material so that the actual spray rates can be verified and approved by the Engineer. Unless otherwise agreed in advance, the Contractor shall only spray when the Engineer's representative is present.

The Contractor shall provide, at his cost, representative samples of every batch of prime delivered onto site.

Table A8.1.8-1: Payment reduction factors for conditionally accepted prime coat

Deviation specified spray rate at spraying temperature (%)	Payment reduction factor of tendered rate
±8,0	1.00
±9,0	0.97
±10,0	0.95
±11,0	0.90
±12,0	0.85
±13,0	0.80

Any deviation outside these limits shall not be paid for however, the Engineer shall have the right to instruct the Contractor to make up any deficiency, or blind excessive prime without additional payment. If under-spraying occurs, and it is accepted by the Engineer, only the actual quantities applied shall be paid for.

A8.2 COVER SPRAYS, FOG SPRAYS AND REJUVENATION SPRAYS

PART A: SPECIFICATIONS

aaaa) A8.2.1 SCOPE

This Section covers the work in connection with the application of cover sprays, fog sprays and rejuvenation sprays.

bbbb) A8.2.2 DEFINITIONS

Cover spray - refers to the application of a diluted emulsion as a final binder application on single or double seals or before application of the slurry, in case of Cape seals.

Fog spray or rejuvenation spray - is used for the application of diluted anionic emulsion or rejuvenator for purposes of adding additional binder to the seal or rejuvenating the seal at a later stage of the seal life.

The convention for describing diluted emulsion in this document is to state the type of emulsion with the proportion of emulsion and water in brackets e.g. 65 % cationic emulsion (60/40), which defines the mix as 60 % of the cationic emulsion and 40 % water.

cccc) A8.2.3 GENERAL

Fog sprays in the form of diluted anionic emulsion or inverted bitumen emulsion are applied during the service life of an existing bituminous surfacing to add additional binder or to rejuvenate the existing binder. Fog sprays using stable grade diluted anionic emulsions are applied as a pretreatment prior the application of a surfacing seal, if specified.

Diluted cationic spray grade emulsions are used as cover sprays during seal construction or shortly thereafter where the seal is sensitive to aggregate loss.

(1) A8.2.3.1 Weather limitations

Weather limitations as specified in Clause A10.1.3.2 of Chapter 10 shall apply.

(2) A8.2.3.2 Nominal rate of application for cover sprays, fog sprays and rejuvenation sprays

The nominal rate of application for tender purposes shall be:

- a) Diluted cationic emulsion cover spray at 1,0 l/m²
- b) Diluted anionic or cationic emulsion cover spray, in the case of Cape seals, at 0,8 l/m²
- c) Diluted anionic emulsion fog spray as enrichment treatment at 0,8 l/m²
- d) Rejuvenation spray with cut-back inverted emulsion or other Agrément certified products at 0,5 l/m²

dddd) A8.2.5 MATERIALS

(1) A8.2.5.1 Bitumen

a) Cover spray

Diluted 65 % cationic spray grade emulsion, or 60 % anionic stable grade emulsion, with the dilutions as specified in Part C: Measurement and Payment.

b) Fog spray as enrichment treatment

A diluted 60 % anionic stable-grade emulsion (50/50) shall be used.

c) Rejuvenation spray

Agrément SA certified products or inverted bitumen emulsion complying with SANS 4001 – BT5, with the exception that the Viscosity at 60 °C on residue from distillation shall be between 10 and 20 Pas.

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A8.2.7 EXECUTION OF THE WORKS

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A8.2.7.1 Preparation and execution

The areas to be treated shall be cleaned of all dust, dirt, dung, oil or any other foreign matter.

The treatment shall consist of the application of a cover spray, fog spray or rejuvenation spray of the specified grade and dilution of bituminous emulsion to the existing surface, by means of a pressure distributor, at the rates of application as specified in the Contract Documentation or as directed by the Engineer, in widths that may vary from 0,5 m to 4,0 m.

A water tanker with a pressure distributor shall be available on standby for pre-wetting or post-wetting the areas scheduled for fog spray.

(2)

A8.2.7.2 Opening to traffic

Treated sections shall only be opened to traffic when the emulsion has properly cured and tackiness has reduced to the extent that no pickup occurs. Should pick-up occur after opening, immediate action is required by the Contractor to stabilise the situation through closure, water spraying or blinding with approved coarse sand.

Traffic accommodation shall comply with the specifications in Clause A1.5 of Chapter 1.

A10.1 GENERAL REQUIREMENTS FOR SURFACE TREATMENTS PART A: SPECIFICATIONS

A10.1.1 SCOPE

This Chapter covers all the material requirements and work in connection with the construction of surface treatments incorporating single seals, multiple stone seals, sand seals, Cape seals, graded aggregate seals, slurry seals and microsurfacings.

A10.1.2 DEFINITIONS

Surface treatments - encompass thin bituminous surfacings applied as wearing courses for new construction or as reseals.

Bitumen - is a dark brown to black viscous liquid or solid, consisting essentially of hydrocarbons and their derivatives. It is soluble in trichloroethylene, is substantially non-volatile, and softens gradually when heated. Bitumen is obtained by refining petroleum crude oil.

Penetration grade bitumen - is manufactured by straight-run distillation of crude oil or by blending two or more base components (one hard, such as 40/50 pen, and the other soft, such as 150/200 pen). Penetration grade bitumen is used either as a primary binder (70/100 pen for surface seal work in South Africa) or as a base bitumen for the manufacture of cut back bitumen, modified binders or bitumen emulsions.

Bitumen emulsions - are two-phase systems consisting of a dispersion of bitumen droplets in water which contains an emulsifier. The emulsifiers are added to assist in the formation of the emulsion, to render it stable, and to modify its properties. Different grades of emulsion are manufactured to allow slower and faster curing e.g. stable grade (Slow setting) is required for labour intensive work and manufacturing of conventional slurries. Spray grade (Rapid setting) emulsions are preferred for spray sealing. The terms cationic and anionic derive from the electrical charges on the bitumen globules. The positively charged cationic emulsions are preferred for construction of sprayed seals due to superior adhesive properties with the mostly negatively charges aggregate used for seal work in South Africa.

Cutback bitumens - are blends of penetration grade bitumen and slow, medium or rapid curing solvents. The choice of solvent determines the rate at which the bitumen will "set up" or cure when exposed to air. A rapid-curing (RC) solvent will evaporate more quickly than a medium-curing (MC) solvent, which in turn will cure more rapidly than a slow-curing (SC) solvent. The viscosity of the cutback bitumen is determined by the proportion of solvent added. MC-30 used for prime coats has a high percentage of medium curing solvent (45 %) with a very low viscosity. MC-3000 used for sprayed seal work has approximately 12 % solvent allowing application at low road surface temperature.

Modified binders - modification is achieved by the introduction of polymers, crumb rubber, aliphatic synthetic wax or naturally occurring hydrocarbons to a penetration grade bitumen. Modified binders for seal work are classified into:

- Hot homogeneous modified binder S-E1 and S-E2 for spray sealing and C-E1 for crack sealing (refer properties in TG1)
- Cold homogeneous modified binder SC-E1 and SC-E2 for spray sealing and CC-E1 for crack sealing
- Hot non-homogenous modified binder S-R1 and S-R2 for spray sealing and C-R1 and C-R2 for crack sealing

Aggregate for seal work consists mainly of crushed rock with specified hardness, durability, polishing resistance, adhesion to bitumen and falling within selected grading envelopes. Screened natural gravels and

sand as well as crushed slag, separated from metals during the smelting or refining of ore, are also used with success for specific seal types.

Sprayed seals - are constructed by spraying bituminous binder, spreading of aggregate and rolling. For purpose of this document sprayed seals are divided into sand/ grit seals, single stone seals (Including single stone and sand blinding layer), Multiple stone seals (Double or triple stone seals) and Graded aggregate seals e.g. Otta seals.

Combination seals -are defined as seal types consisting of at least two components of different character e.g. Cape seals (Single stone seal with one or two layers of slurry) and Slurry-bound Macadam seals.

Slurry -is a homogenous mixture consisting of fine aggregate (normally crusher dust), or where required to satisfy grading requirements and permitted, a blend of crusher dust and a limited percentage approved natural sand, stable grade bitumen emulsion (anionic or cationic) or a polymer modified stable grade emulsion, active filler (usually cement or lime), water, additive to retard the setting rate of rapid setting slurry) and Polymer (in case of micro surfacings).

Tack coat - is defined as the first application of binder for a sprayed seal or a Cape seal

Penetration coat - is defined as the second application of binder on a multiple stone seal

The **term cover spray** - refers to the application of a diluted emulsion as a final binder application on single or double seals or before application of the slurry, in case of Cape seals.

The term **fog spray or rejuvenation spray** -is used for the application of anionic emulsion, diluted anionic emulsion or invert emulsion rejuvenator for purposes of adding additional binder to the seal or rejuvenating the seal at a later stage of the seal life. Specifications for this type of treatment are provided in Chapter 8.

A10.1.3 GENERAL

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A10.1.3.1 Requirements pertaining to all surface treatments

Adequate advance notice shall be given to the Engineer before the Contractor proceeds with any seal work. This notice shall include the program containing exact dates and sections to be sealed as well as the stockpile/s which will be used for each section.

Seal work shall not commence until a design has been submitted for each section and approved by the Engineer.

The areas to be sealed shall be cleaned of all dust, dirt, dung, oil or any other foreign matter that may be deleterious to the seal. Sealing work shall not commence until the Engineer has approved all preparatory works ordered on that section of road.

Unless otherwise agreed by the Engineer and subject to the outcome of a trial section, the Contractor shall programme all spraying to cease each working day at 15:00.

The Contractor shall comply with the requirements of Chapter 1 regarding traffic over completed layers

Wherever reference is made to distance the measurements for length shall be taken as actual lengths measured along the road centreline.

All quantities of sprayed binder and variations shall be measured at spray temperature of the applied binder.

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A10.1.3.2 Weather limitations

The following general limitations shall apply:

- Whenever the temperature of the road surface falls below the specified temperature for the binder to be applied or will probably fall below the required temperature before spraying the binder, no binder shall be sprayed;
- No bituminous work shall be done during foggy or rainy weather and, when a cold wind is blowing, the above temperatures as specified in the sub-sections below, shall be increased by 3°C to 6°C.
- When strong winds (more than 30 km/h) are blowing which are likely to interfere with the proper execution of the work, no sealing, especially spraying of binder, shall be done;
- No sealing shall be done when rain or cold temperature is imminent;
- No sealing shall be done when the surface of the layer is visibly wet, i.e. more than damp;
- No sealing shall be done after sunset

Only emulsion products, MC3000 and cutback S-E1 binder shall be permitted during the embargo period stated in the Contract Documentation. Special formulated winter grade binders shall only be allowed if provision is made in the Contract Documentation.

The minimum road-surface rising temperatures at which the spraying of the different types and grades of binder shall be allowed are specified in Table A10.1.3-1.

Table A10.1.3-1: Minimum road-surface rising temperature

Bituminous binder type	Minimum rising road surface temperature
70/100 penetration-grade	25°C
MC 3000	10°C
Cationic emulsion	10°C
Anionic emulsion	10°C
S-E1	25°C
S-E2	25°C
S-R1	25°C
S-R2	25°C
SC-E1	10°C
SC-E2	10°C
S-E1 cut back with 4.5% MC30	23°C
S-E1 cut back with 9.0% MC30	21°C
Any special formulated binder not defined above	As in the specified Contract Documentation

Conventional slurry shall not be applied at an air temperature of less than 7°C when temperatures are rising or less than 13°C when temperatures are dropping.

During hot weather slurry operations shall be suspended when aggregate is being displaced by the spreader box or squeegees.

Rapid setting slurry or microsurfacing shall be sufficiently versatile to be laid in air temperatures of 4°C to 40°C as well as capable of being laid under damp conditions. When the breaking process accelerates to such an extent that it renders the product unworkable to attain the required end result, no further work shall be done until adjustments to the composition of the product have been proven through trial sections and approval by the Engineer.

iii) **A10.1.3.3 Areas inaccessible to mechanical equipment**

a) Bituminous binder application

Each area that is to be sealed shall be screened off by means of fibre-reinforced paper, so that only the area to which the binder is to be applied will be exposed.

Bituminous binders shall be applied at the rate specified in the Contract Documentation by means of a binder distributor. Hand-spray or light appropriate equipment may be used only with the written approval of the Engineer and then only in accordance with approved methods under the strict supervision of experienced personnel and with equipment suitable for performing the work in accordance with specified requirements.

The application of binders shall be controlled to ensure that the

specified application rates are obtained.

b) Aggregate

The aggregate shall be of the same size as the aggregate in the existing

surrounding seal and shall be spread by hand.

c) Rolling and brooming

Each layer of the seal shall be rolled with the most effective rollers that can be used in the area in question and thereafter the excess aggregate shall be swept off the surface with hand brooms

d) Grit or slurry application

The Engineer may require Grit or a texture slurry to be applied to areas subjected to traffic turning actions. The slurry and application thereof shall comply with the requirements of Section A8.3 of Chapter 8. Grit shall conform to specifications in Clause A10.1.5.14. The Engineer may order precoating of the Grit and application of diluted cationic emulsion before spreading the Grit.

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A10.1.3.4 Protection of kerbs, channels, etc.

Kerbs, channels, manholes, guard rails, bridge railings and any other structures, adjoining seals to be constructed, shall be protected from soiling. The Contractor shall replace at his own cost any items that have been soiled.

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A10.1.3.5 Moisture content

No seal shall be placed immediately after a rainy spell on an existing partly cracked and /or highly permeable surfacing resulting in the trapping of moisture in the pavement structure. A minimum delay of 24 hours shall apply.

Seal work shall not be permitted on new granular base layers of type G1, G2 or G3 if the moisture content in the upper 50 mm exceeds 50 % of the optimum moisture content as determined in accordance with SANS 3001 No GR30.

Seal work shall not be permitted on new granular base layers of type G4 or G5, if the moisture content in the upper 50 mm exceeds 60 % of the optimum moisture content as determined in accordance with SANS 3001 No GR30.

These limitations shall apply even if the layer has been previously primed.

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A10.1.3.6 Pretreatment

New base layers shall be pre-treated if the volumetric macro texture depth varies with more than 40 % or if the macro texture exceeds the guideline values for different seal types as published in SABITA Manual 40.

Existing roads that require resealing shall, if so specified in the Contract Documentation, be given a pretreatment in accordance with one or more of the methods described in Chapter 8.

The following curing periods shall apply to the various treatments listed, prior to applying to seal/reseal unless otherwise specified in Contract Documentation:

Texture treatment using fine slurries.....	6 weeks
Coarse slurry, rapid setting slurry or microsurfacing applied as screed or rut filling	12 weeks
Crack sealing	2 weeks
Asphalt patches for pavement repair	6 weeks
Bitumen treated granular materials.....	4 weeks
Untreated granular and cement stabilised materials	2 weeks

The Engineer may reduce the specified curing period for slurry, microsurfacing and asphalt application, based on a representative corrected ball penetration (SANS 3001-BT10), at the expected operating road surface temperature (Refer SABITA Manual 40) of less than 2,0 mm.

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A10.1.3.7 Demarcation of working area

The Contractor shall demarcate the area to be sealed by means of setting out string lines along each edge of the specified seal area. The intervals for setting out horizontal curves shall be as agreed with the Engineer.

Before the tack coat and first application of aggregate may be applied, the centreline of the road shall be demarcated by means of a clearly visible fibre rope, pegged down with nails driven into the existing surface or primed base at intervals of 15 m on straight sections and 3,0 m apart on curves. The demarcating rope shall be removed prior to the application of the tack coat and aggregate on the adjacent lane.

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A10.1.3.8 Dust control

Any temporary deviations and construction roads shall be kept watered and damp during all sealing operations and all dust shall be removed from surfaces before any binder, aggregate or slurry is applied.

The supply and application of water on temporary deviations will be paid for separately as specified in Clause A1.5.7.10 of Chapter 1 but payment for watering the haul and construction roads shall be included in the unit rates tendered for the various types of seals used.

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qqqq) A10.1.3.9 Spray joints

a) Transverse joints

In order to prevent overlapping at junctions of separate binder applications the previous work along the joint shall be covered with removable reinforced paper for a sufficient distance back from the joint to ensure that the sprayer is operating at the required speed before the untreated surface is reached and also to prevent additional binder application onto the previously treated section. The same method shall be used to ensure a neat joint at the end of the run.

b) Longitudinal joints

Longitudinal joints shall be constructed meeting the following requirements:

- Unless specified differently in the Contract Documentation, the spraying of adjacent strips shall overlap by 200 mm i.e. 100 mm of 2/3 application and 100 mm of 1/3 application
- The string line on the joint shall demarcate the area sprayed at full application and 2/3 application
- No turning of the end nozzles or use of fish plates shall be allowed at longitudinal joints
- Aggregate shall only be applied on the area with full triple overlap binder application
- No longitudinal joints are allowed in the wheel tracks
- All aggregate applied on the 2/3 and 1/3 binder application shall be broomed back or chipped off in a neat straight line before the adjoining spray • All stone-loss shall be made good by the Contractor at no additional cost

rrrr) A10.1.3.10 Traffic limitations

Traffic shall not be allowed:

- On a single seal or double seal prior to application of the cover spray, if designed with a cover spray
- On the first layer of aggregate of a double seal, second layer of a triple seal (split application double seal) or Cape seal (single seal with slurry) • On non-completed longitudinal joints

Stop/go positions shall not be allowed at steep grades.

Speed restriction of maximum 60 km/h shall be enforced for at least 24 hours after opening to traffic or for such time as determined by the Engineer. The Contractor shall not allow any construction equipment which is likely to cause damage, over the completed seal.

ssss) A10.1.3.11 Opening to traffic

The road shall not be opened to traffic until sufficient adhesion has developed between the binder and aggregate, cover sprays, fog sprays and rejuvenation sprays have lost its tackiness or in the case of slurry seals, the slurry has cured completely.

When non-fluxed binders are applied and cold temperatures are expected, the road shall only be opened to traffic when the surface temperature increases above 20°C.

During the specified embargo period, and unless MC3000 has been used, the road shall only be opened to traffic when the road surface temperature increases above 20°C. Closures are required for the first three days after sealing when the road surface temperature falls below 20°C

When rain is imminent, the road shall only be opened to traffic once the surface is dry.

The Contractor shall erect and maintain the necessary temporary traffic-control signs in accordance with the requirements in the Contract Documentation and the latest version of the South African Road Traffic Signs Manual.

Where a double application of slurry has been specified in case of single seals with slurry, the Contractor shall open the road to traffic before the second layer of slurry is applied.

Where road widths allow, traffic shall be directed through placement of delineators to compact the full width of the applied seal.

tttt) A10.1.3.12 Trial sections

Before the Contractor commences with the construction of any seal work he shall demonstrate that the equipment and processes he proposes to use will enable him to construct the seal in accordance with the specified requirements.

At the commencement of the surfacing operation, a 200 m lane section shall be considered as a trial. After completion of each phase of the seal on this 200 m section, the Engineer will review and then approve/reject the work method. If approval is granted for a specific operation i.e. application of tack coat, aggregate, fog or slurry, the Contractor shall proceed with that approved operation and document the approved method statement, which shall include aggregate spread rates, the timing, type, sequence and number of roller passes, as well as the approved strategy for opening to traffic.

Trial sections for sand seals and Grit seals, using emulsion, shall specifically be designed to evaluate the appropriate timing of aggregate application to prevent wave forming as well as the sequence and timing of rollers to prevent pick up.

Should the Contractor at any stage fail to deliver an accepted product, as adjusted, he shall rectify the problems at his own cost, demonstrate with a further trial section that he can carry out the operation successfully and revise the method statement. No specific payment shall be made for conducting these additional trials.

uuuu) A10.1.3.13 Maintenance

The Contractor shall maintain the bituminous surface until the work is finally accepted by the Employer, after the specified Defects Notification Period. Any damage related to design, materials and workmanship or any defects which may develop before the issue of the Performance Certificate, fair wear and tear and 3rd party mechanical damage excepted, shall be corrected by the Contractor at his own cost.

Treatment of defects shall be carried out in accordance with Chapter 8.

Penalties in accordance with Part D of this Chapter shall apply, when applicable.

vvvv) A10.1.3.14 Nominal rates of application for tender purposes

The nominal rates of application provided in these specifications are for tendering purposes only and will not necessarily be used in construction. Application rates for all bituminous binders shall be specified at spraying temperature.

All binders, aggregates and slurry used in the various types of seals shall be applied at the rates of application as approved by the Engineer after:

- Measurement of the existing surface characteristics
- Testing of the materials proposed for use
- Aggregate spread rate determination on site
- Construction and evaluation of a trial section
- Documentation of the method statement and approval thereof

a) Single seals

The nominal rates of application given in Table A10.1.3-2 shall be used for tendering purposes only.

The actual application rate shall be as approved by the Engineer after assessing the Contractor's design proposals.

Table A10.1.3-2: Nominal binder application rates for single seals

Nominal size of aggregate mm	Nominal rates of binder application for tack coat (l/m ²)				Nominal aggregate spread rate (m ² per m ³)	
	Conventional bitumen and emulsion. (Residual cold bitumen)	Homogeneous modified emulsion. (Residual cold binder)	Hot applied homogeneous modified bitumen at spray temperature.	Hot applied non-homogeneous modified binders at spray temperature	Aggregate spread rate for conventional and homogeneous modified binders	Aggregate spread rate for non-homogeneous modified binders
20	1,6	1,6	1,9	2,7	70	65
14	1,4	1,4	1,7	2,1	100	90
10	1,0	1,0	1,2	1,6	140	130
7,1	0,75	0,75	0,9	1,1	200	
5	0,6	0,6	0,7		250	

b) Multiple stone seals

The nominal rates of application given in Tables A10.1.3-3 and A10.1.3-4 shall be for the purposes of tendering only and the actual rates of application shall be approved by the Engineer.

The use of cut-back bitumen in the tack coat will only be permitted under special circumstances and if so specified in the Contract Documentation.

Table A10.1.3-3: Nominal rates of first application of binder and aggregate for multiple stone seals

Nominal size of aggregate mm	Nominal rates of binder application for tack coat (l/m ²)				Nominal aggregate spread rate (m ² per m ³)	
	Conventional bitumen and emulsion. (Residual cold bitumen)	Homogeneous modified emulsion. (Residual cold binder)	Hot applied homogeneous modified bitumen at spray temperature	Hot applied non-homogeneous modified binders at spray temperature	Aggregate spread rate for conventional and homogeneous modified binders	Aggregate spread rate for non-homogeneous modified binders
20	1,2	1,2	1,3	2,0	75	65
14	0,9	0,9	1,0	1,8	110	90
10	0,7	0,7	0,8	NA	150	130

Table A10.1.3-4: Nominal rates of application for second binder and final aggregate

Nominal size of aggregate mm	Nominal rates of binder application for penetration coat (l/m ²)				Nominal aggregate spread rate (m ² per m ³)	
	Conventional bitumen and emulsion. (Residual cold bitumen)	Homogeneous modified emulsion. (Residual cold binder)	Hot applied homogeneous modified bitumen at spray temperature	Hot applied non-homogeneous modified binders at spray temperature	Aggregate spread rate for conventional and homogeneous modified binders	Aggregate spread rate for non-homogeneous modified binders
10	1,0	1,0	1,2	1,8	165	140
7,1	0,8	0,8		-	170	
7,1 (1st layer)*	n/a	n/a		-	250	
7,1 (2nd layer)*	1	1	1,1	-	150	
5	0,6	0,6	0,9	-	230	

*Split application 20/7 double seal

Residual cold binder is defined as the net binder (bitumen, polymers and additives) cold at a temperature of 20°C. The hot applied binder is calculated by multiplying the residual cold bitumen by the "Cold to hot" conversion factors published in TRH3.

c) Nominal binder application and aggregate spread rates for sand and grit seals

The nominal rates of application given in Table A10.1.3-5 shall be for the purposes of tendering only and the actual rates of application shall be as approved by the Engineer.

Table A10.1.3-5: Nominal binder and aggregate application rates for sand and Grit seals

Seal Type	Hot applied 70/100 Pen bitumen at spray temperature.	Hot applied MC3000 at spray temperature.	Hot applied Emulsion at spray temperature.	Aggregate spread rate (m ² per m ³)
Grit precoated		1,1	1,1	200
Grit unprecoated		1,2	1,3	200

Sand	1,0	1,2	1,3	180
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d) Nominal binder application and aggregate spread rates for Cape seals (Single seal component)

The nominal rates of binder and aggregate application provided in Table A10.1.3-6 shall apply for tender purposes only.

Table A10.1.3-6: Nominal application for binder and single sized aggregate application in Cape seals

Nominal size of aggregate (mm)	Conventional bitumen and emulsion. (Residual cold bitumen)	Homogeneous modified emulsion. (Residual cold binder)	Hot applied homogeneous modified bitumen at spray temperature.	Aggregate spread rate for conventional and homogeneous modified binders
20	1,2	1,2	1,5	75
14	0,9	0,9	1,2	110
10	0,65	0,65	0,8	150

Residual cold binder is defined as the net binder (bitumen, polymers and additives) cold at a temperature of 20°C. The hot applied binder is calculated by multiplying the residual cold binder by the "Cold to hot" conversion factors published in TRH3.

e) Nominal binder application and aggregate spread rates for Cape seals (Slurry component)

The following proportions per cubic metre of slurry shall apply for tendering purposes only:

(i) First or only slurry application

Slurry aggregate (saturated volume) 1,0 m³
Stable-grade emulsion at mixing temperature 230 l
Cement
..... 16,5kg³
Water..... 210 l

(ii) Second slurry application

Slurry aggregate (saturated volume) 1,0 m³
Stable-grade emulsion at mixing temperature 260 l
Cement
..... 16,5kg³
Water..... 200 l

The following spread rate of slurry (saturated aggregate volume) shall apply for tender purposes only: **Table A10.1.3-7: Nominal spread rate of slurry for Cape seals**

Nominal size of aggregate (mm)	First layer of slurry (m ² per m ³)	Second layer of slurry (m ² per m ³)
20	140	185
14	150	
1	180	

f) Nominal binder application spread rates for Slurry-bound Macadams

The nominal rates of aggregate and slurry application provided in Table A10.1.3-8 shall apply for tender purposes only

Table A10.1.3-8: Nominal application rates of aggregate and Slurry for Slurry-bound Macadam

Layer Thickness (mm)	Nominal size of aggregate (mm)	Aggregate spread rate rate (m^2/m^3)	Slurry Spread rate (m^2/m^3)
25	14	40	16
30	14	33	13
30	20		
40	20	25	10
50	20		
50	28	20	10

The following proportions per cubic metre of slurry shall apply for tendering purposes only:

Slurry aggregate (saturated volume) 1,0 m^3
 Stable-grade emulsion at mixing temperature 230 /
 Cement..... 0,01 m^3
 Water..... 200 /

g) Cover sprays

The nominal hot application rate of a diluted emulsion cover spray (50/50) as

specified, shall for tender purposes be 0,8 l/m^2 . **h) Slurry**

The nominal rate for a void filling coat of diluted 60 % anionic stable-grade emulsion (50/50), before application of the slurry, for tender purposes, shall be 0,8 l/m^2 .

The nominal binder content of the slurry (60 % anionic stable-grade emulsion), for tender purposes shall be taken as 235 l/m^3 . The nominal active filler content of the slurry, for tender purposes shall be taken as 16,5 kg/m^3 .

The nominal rate of slurry application is dependent on the thickness and shall be

specified in the Contract Documentation. **i) Microsurfacing**

The nominal binder content (emulsion) for tender purposes shall be taken as 180 l/m^3 .

The nominal rate of microsurfacing application is dependent on the thickness and shall be as specified in the Contract Documentation.

www) A10.1.3.16 Precoating fluid

For tender purposes the nominal quantity of precoating fluid for the relevant nominal aggregate sizes is specified in Table A10.1.3-9.

The nominal application rates as provided in Table A10.1.3-9 are for tender purposes only and must be verified in the site laboratory, with upward adjustment in case of precoating on stockpile by hand or front-end loader. **Table A10.1.3-9: Nominal rates for precoating fluid**

Nominal aggregate size (mm)	Nominal precoating application on stockpile or by hand rate (l/m^3)	Nominal precoating application plant precoating rate (l/m^3)
20	12	10
14	14	12

10	16	14
7,1	18	16
5 or Grit	20	18

If required, an adhesion agent approved by the Engineer shall be added to the precoating fluid at a rate of 0,5 % of the volume of precoating fluid.

A10.1.6 CONSTRUCTION EQUIPMENT

The following equipment shall be available and in good working order:

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A10.1.6.1 Binder distributor

The binder distributor used for distributing the bituminous binders shall-

- Comply with SANS 3001-BT20 and shall be covered by a valid certificate of compliance with SANS 3001-BT20, *not older than 12 months*, issued by an accredited testing organisation
- Not have any fuel, oil or binder leaks;
- Have a straight and clean spraybar, all the spray heads of which shall be of the same type which open simultaneously and shall not leak when closed;
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- Have its spray heads all spraying at the same angle to the spraybar and the height adjusted to the correct level so as to obtain the required overlapping. The uneven application of binder shall be unacceptable.
- Have its sieve undamaged and clean;
- Be under the direct control of an operator approved by the Engineer on the grounds of a CV with experience and list of contracts completed with references, in writing or a certificate of competence signed by a representative of a road authority;
- Be fitted with a suitable cut-off spray-head (end nozzles) or fishplates to prevent over spraying onto gravel shoulders or staining of concrete elements on the edge of the surfacing of the road.
- Be capable of spraying the binder at the specified applications rates. The pump of the distributor shall be capable of delivering the binder at the spray bar nozzles at the correct pressure to obtain the specified application rates, irrespective of the viscosity properties of the prescribed binder and the number of nozzles open.
- Fitted with a suitable valve or other access gate for taking of samples of the binder for testing purposes.

The binder distributor, pumps and nozzles, used for non-homogeneous modified binder shall be adapted to spray the rubber modified binder satisfactorily. The Contractor shall provide proof by way of a test on the site that the binder distributor has sufficient reserve power to maintain the required constant speed up the steepest incline to which spray has to be applied and to obtain a uniform distribution of the binder.

The transverse distribution of the spray bar shall be field-verified by means of SANS 3001-BT24. Measurements of transverse distribution ('Bucket test') for a binder distributor. The maximum permissible tolerance permitted between the troughs (excluding the outer 300 mm) is dependent on the viscosity of the binder type being applied and shall be as follows:

- All emulsions, cutback and penetration grade bitumens – 5 %
- Hot homogeneous modified bitumens – 7 %
- Non-homogeneous binders (bitumen rubber) – 10 %

The spray bar shall be of such design as to allow for any adjustments to be made in order to meet the above tolerances. This procedure shall be carried out each time the distributor is first established on site and once a week thereafter or when a problem with transverse distribution is suspected. The distributor shall thus have a set of troughs available in order to allow the execution of the test. For limited quantities of spray-work, the Engineer may accept the results of a recently completed distribution test that has been recorded and approved by an independent supervisor on the distributor's test log book.

The transverse distribution of spray flairs shall be field verified according to SANS 3001-BT24 and Clause A20.1.5.9 of Chapter 20. The maximum permissible tolerance permitted for each trough from the average of the nine troughs is 10 %.

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A10.1.6.2 Chip spreaders

The chip spreaders shall be capable of spreading stone of the specified size uniformly and shall be capable of adjustment to permit variation of the rate of application within the specified tolerances and uniform spreading in both the transverse and longitudinal directions.

The chip spreader shall be capable of delivering a proper and uniform transverse distribution of chips across the width of application. The chip distribution shall be tested by means of canvas patches, each 1,0 m by 1,0 m and placed side by side over the full width of application. The mass of chips spread onto each individual canvas patch shall not deviate by more than 10 % from the spread rate determined as part of the trial section and recorded in the approved method statement.

At least two chip spreaders shall be provided on site, one of which shall be self-propelled.

In cases where the sprayed width exceeds the maximum spread width of the chip spreader, an additional chip spreader shall be provided to apply aggregate on the remaining strip within twenty seconds of the first chip spreader.

Spreaders which are not self-propelled shall be of a type that can be attached quickly to the rear of trucks and operated while backed over the aggregate being spread.

A non-self-propelled chip spreader may only be used in the event:

- of a breakdown of the self-propelled chip spreader during a pull, and shall be limited to the completion of that pull. No further application of binder shall be permitted until such time as the self-propelled chip spreader is repaired or replaced.
- of spreading Class 3 aggregate, Graded aggregate, Sand- or Grit seals and Slurry-bound Macadam seals.

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A10.1.6.3 Rollers

a) General

Sufficient operational rollers of each of the following types shall be available on the works to maintain the required tempo of work.

- Pneumatic tyred rollers (minimum two)
- Rubber-soled steel wheel rollers (as and when specified in the Contract Documentation)
- Light steel wheeled rollers of 2 – 4 tons (minimum two)
- Heavy steel wheel rollers of 5 – 12 tons (as and when specified in the Contract Documentation)

The timing, sequence of rolling and number of passes for each seal type shall be in accordance with the approved method statements following completion of the trial sections.

No seal work shall continue if the required rollers are not on site

or not in an operational condition.

b) Pneumatic-tyred rollers

Pneumatic-tyred rollers shall be of a self-propelled type equipped with smooth flat profile pneumatic tyres of uniform size and diameter. The mass of the roller shall not be less than 2 ton per wheel.

The rollers shall be equipped with suitable devices for keeping the wheels wet and clean with water or non-petroleum-based products during operation.

The wheels of the roller shall be so spaced that one pass of the roller will provide one complete coverage equal to the rolling width of the machine. The total operating mass and tyre pressure shall be in accordance with the manufacturer's recommendations. Individual tyre pressures shall not differ by more than 35 kPa from one another.

In case of sealing more than 12 000 m² per day, using hot binder, at least three

pneumatic-tyred rollers are required.

c) Rubber-soled steel-wheeled rollers

Rubber-soled steel-wheeled rollers shall be self-propelled and have a mass of between 6 and 8 tons. It shall be equipped with suitable devices for cleaning and moistening the wheels using water or non-petroleum-based products. The wheels of the roller shall be so arranged as to give one or two complete coverage by one passage of the roller, over a width equal to the rolling width of the roller. **d) Steel-wheeled rollers**

Steel-wheeled rollers shall be self-propelled tandem rollers of between 2 and 4 tons mass and shall be equipped with suitable devices for cleaning and moistening the wheels using water or non-petroleum-based products. Heavier rollers shall only be permitted when specified in the Contract Documentation and tested for excessive crushing during construction of the trial section. No steel-wheeled rollers shall be used on the final aggregate layer without the consent of the Engineer, unless a cover spray will be applied after brooming the surface.

bbbbbb) A10.1.6.4 Water sprinkler

The water sprinkler shall have efficient spray equipment, capable of spraying a uniform film of water over the whole area to be primed.

ccccc) A10.1.6.5 Rotary broom

The rotary broom shall be height adjustable self-propelled or a towed type supplied together with a suitable pneumatic-tyred towing vehicle. The minimum bristle length allowed shall be 70 % of the initial length.

dddddd) A10.1.6.6 Drag broom

A triangular or "Z-shaped" drag broom shall be provided together with a suitable pneumatic-tyred towing vehicle and capable of being ballasted to distribute the specified seal aggregate size.

eeeeee) A10.1.6.7 Miscellaneous equipment

Sufficient equipment for handling and hauling aggregate, binder and slurry, and blending units for non-homogeneous modified binders, shall be provided to ensure prompt and continuous placing and application of bituminous materials as specified. The Contractor shall have available all the necessary ancillary equipment, which shall include hand brooms, mat or reinforced paper for joints, string, nails and hand tools to carry out the work efficiently.

Suitable protective clothing shall be worn at all times.

Suitable fire-fighting equipment for dealing with fires shall be available on site, together with suitable first aid equipment for dealing with injuries and evacuation transport in case of bitumen burns. (Refer to Sabita Manual 8: Bitumen Safety Handbook.)

The Engineer shall be entitled to request reserve plant should there be any doubt as to the efficiency or capability of the equipment provided.

fffff) A10.1.6.8 Batch mixer for slurry

A mixer shall be provided in a good working order capable of producing a uniform slurry of the constituent materials. All the constituents of the slurry shall be accurately proportioned and due care and attention shall be given to the sequence in which the ingredients are introduced into the mixer and to the period of mixing. Volume batching will only be permitted with the written approval of the Engineer. Mixing shall be continued until the materials in each batch are thoroughly blended.

ggggg) A10.1.6.9 Mass-measuring device for large batch mixers

Where payment per ton is specified, the Contractor shall provide and install suitable gauged mass-measuring device on the site. The device shall be provided with a printer for printing the mass, the time and date. The printed data shall be submitted to the Engineer on a daily basis.

hhhhh) A10.1.6.10 Loader for aggregate

A loader, or equivalent capacity labour force where so required in the Contract Documentation, compatible with the needs and capacity of the trucks or mixer, in the case of slurry, unit shall be available at the stockpiling site.

iiiiii) A10.1.6.11 Continuous slurry machine

Aggregate and filler contained in separate bins shall be fed through metering devices at controlled rates to the mixer. Water and bitumen emulsion contained in separate tanks shall similarly be pumped to the mixer at controlled rates through precise metering devices to enable the various constituents to be combined continuously to the selected or prescribed formulation. The mixing of the slurry shall be at a suitable rate adjusted to ensure complete blending of the ingredients and uniformity of mix before depositing into the spreader box.

The spreader box shall be so constructed as to distribute the weight onto metal skids in such a way that no damage shall be done to the surface when the box is in operation.

Soft rubber belting shall be attached to the framework in such a manner as to prevent slurry from being spilt past the sides of the spreader box when the box is in operation.

The spreader box shall be capable of spreading a uniform application of the slurry in adjustable widths from 1,5 m to 4,0 m, at specified rates, and it shall have efficient mechanical means of adjusting the rates and widths of application specified.

The mixing and application of micro surfacing shall be done by a mixer designed to provide a rapid mixing time, and sufficient agitation within the spreading system to prevent segregation or premature hardening. The appropriate workability measured by the flow (Consistency test: ASTM 3910) shall be verified during the first application and recorded as part of a method statement.

jjjjj) A10.1.6.12 Spreader box for slurry

If the use of a spreader box has been permitted in the Contract Documentation, the type of spreader box used for spreading the slurry shall be submitted to the Engineer, in advance, for approval. The spreader box for rapid setting slurry shall be of a proven and approved type, fitted with a proven and approved device to ensure sufficient agitation within the spreader system.

A10.1.7 EXECUTION OF THE WORKS

kkkkk) A10.1.7.2 Multiple stone seals

a) Preparation

All specifications as stated in Clause A10.1.3 shall be met.

b) Application of tack coat and first layer of aggregate

The binder of the type and grade and the aggregate of the size and grade specified in the schedule of quantities and according to the design approved by the Engineer, shall be applied as specified in Clause A10.1.7.1b).

c) Application in case of geosynthetic membrane

Following compliance with all relevant specifications in Clause A10.1.3, a tack coat of cationic 65 % bitumen emulsion (without solvents) or SC-E1(t) shall be applied at a spray rate of 0,8//m² by means of a hand applicator or distributor. The geosynthetic shall then be applied to the wet tack coat by hand or a suitable mechanical applicator and rolled with a suitable roller to ensure satisfactory bonding between the geosynthetic and the road surface. All wrinkles shall be smoothed out.

The nominal rate of the binder for the seal shall be as specified in the Contract Documentation.

d) Initial rolling

Initial rolling shall be carried out as specified in Clause A10.1.7.1d).

e) Broom drag and final rolling of aggregate

Dragging and final rolling of aggregate shall be carried out as specified in Clause A10.1.7.1e).

f) Second application of bituminous binder and aggregate

The second bituminous binder shall be applied and followed by the second layer of aggregate of the size specified, in accordance with the approved method statement.

Where hot binders are used, all the aggregate shall be applied immediately but not more than 2 minutes after the application of the tack coat.

The second application of binder shall preferably take place within 48 hours of the application of the tack coat. Where a 20 mm + double 7,1 mm split application seal is to be constructed, the application of the 7,1 mm aggregate shall be carried out in two separate operations. The first application of the 7,1 mm aggregate shall be placed before application of the second binder application, at the application rate determined during construction of the trial section and then slowly dragged with a drag broom to ensure an even distribution.

g) Initial rolling of second and final layer

Initial rolling of the second layer of aggregate, or final layer in case of the 20 mm and double 7,1 mm split application seal, shall be carried out as specified in Clause A10.1.7.1d) or as per approved method statement

h) Broom drag and final rolling of second layer

Dragging and final rolling of the second layer of aggregate shall be carried out as specified in Clause

A10.1.7.1e) or as per approved method statement. i) **Cover spray**

When required by the Contract Documentation or if so directed by the Engineer in writing, a cover spray of diluted SC-E1 or diluted cationic spray grade emulsion shall be applied to the surface of the aggregate by means of a pressure distributor at the rate and dilution specified in the Contract Documentation or as directed by the Engineer.

IIII) **A10.1.7.5 Slurry Seals**

a) **Application of slurry**

Material which is not properly mixed or in which the emulsion shows signs of having broken during mixing shall not be applied to the road.

In order to achieve the required workability, the slurry consistency when measured in accordance with ASTM D3910 section 6.1 shall be within the ranges of the target flow stated in Table A10.1.7-1 or the adjusted ranges, approved by the Engineer, after construction of the trial section. **Table A10.1.7-1: Slurry consistency requirements**

Application	Target Flow
Slurry bound macadam	60 mm
Hand application of slurry for texture treatment or Cape seals	30 - 40 mm
Slurry overlay	20 - 30 mm
Micro surfacing	10 - 20 mm

A1.9 FINISHING THE ROAD AND ROAD RESERVE AND TREATING OLD ROADS

PART A: SPECIFICATIONS

A11.9.1 SCOPE

This Section covers the final finishing and cleaning up of the road and road reserve and all associated works on the site at the completion of construction, including scarifying and treating old roads, temporary deviations and other temporary works.

Construction may be as new construction, as renewal construction or as a combination of both. When construction includes elements under Section A1.6 of Chapter 1: Clearing and Grubbing, Chapter 4: Borrow Materials, and Mass Earthworks; and Section A11.8 of Chapter 11: Landscaping and planting plants, then this Section does not cover the required finishing under those Chapters and Sections.

A11.9.7 EXECUTION OF THE WORKS

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A11.9.7.1 Finishing the road and road reserve

For new construction, after completing the seal, surfacing or gravel surfacing on gravel roads; or other final activities where surfacing is not included, the road and road reserve shall be cleared of all excess earth, stones, boulders, debris, litter, garbage, unwanted vegetation and other waste or excess material resulting from the construction of the works or the use of the road. All finishing and cleaning not previously done or required as specified in the sections of the specifications set out in Clause A11.9.1 above, shall be undertaken and completed. This specification, however, does not intend the finishing, cleaning and maintenance, which must be undertaken as provided for in other Sections of these specifications, to be postponed until the final finishing operations provided for in this section.

For renewal construction after completing construction work within the site, the Contractor shall ensure that all construction generated or related material that may have been swept, windrowed, stockpiled, stored or spread beyond the road surface is removed. This shall be done before any other rehabilitation work is undertaken, including shaping, topsoiling and grassing. Should, during the removal of construction generated or related material, existing vegetation or topsoil be disturbed or destroyed, the Contractor shall, at his own cost, re-instate the road reserve to its original state. This shall include ripping, should the construction material and processes have compacted the original surfaces.

Culvert inlets and outlets, culvert barrels, and open drains shall be cleared of debris, soil, silt undesirable vegetation and other material generated from the construction activities.

The surfacing shall be cleared of all dirt, mud and foreign objects. Brooming or other non-damaging actions shall be used on finished surfacing and dragging, pushing or scraping material across surfacing shall not be permitted.

All junctions, intersections, islands, kerbing and other elements making up the completed works shall be neatly finished off.

The Contractor shall ensure that all noxious weeds have been removed from the road reserve and borrow pit areas.

All materials resulting from the finishing operations shall be disposed of at approved locations, such as approved waste disposal sites or approved disused borrow pits. Excess stone in particular from resurfacing operations shall be collected and removed from the site to ensure that future grass cutting maintenance work will not be hindered by remaining surfacing stone. The Contractor shall make his own arrangements with the owners of properties on which such materials are to be deposited. Disposal shall be carried out in a neat and uniform manner. Disused materials such as pipe culverts, not further required and left with approval on adjoining properties, shall be disposed of out of sight from the road to ensure the road appearance reflects a fully complete and finished project.

All materials resulting from the finishing operations shall be disposed of at approved spoil sites.

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A11.9.7.2 Treating old roads

All old roads, temporary deviations, haul roads and construction roads shall, in so far as is practicable, be levelled with the original ground. Surfaces shall be scarified and broken up to a depth of 150 mm for promoting plant growth.

Where specified by the Engineer, in order to prevent soil erosion, banks, dykes or ditches shall be constructed over the old road to dimensions specified by the Engineer.

All roads and temporary deviations treated as above shall be left in a neat and tidy state.

A11.9.8 WORKMANSHIP

No specific testing of materials is required.

B11.9.1 SCOPE

C4 SITE INFORMATION

SPECIAL MAINTENANCE OF PRIMARY ROAD P30/1 KOPPIES TO SASOLBURG FOR A PERIOD OF
30 MONTHS
BID No: CSR&T/BID16/2023/24

PART C4: LOCALITY PLAN

Item	Description	Unit
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