



METSIMAHOLO LOCAL MUNICIPALITY

RE-ADVERT: APPOINTMENT OF A 7 CE/GB OR HIGHER CIDB REGISTERED CONTRACTOR FOR THE CONSTRUCTION OF TOILETS AND SEWER NETWORK REPAIR IN GORTIN PHASE 1.

BID NO.: 23/2023/24

CIDB GRADING: 7 CE/ GB OR HIGHER

ISSUED BY:

Metsimaholo Local Municipality
Municipal Building
10 Fichardt Street
Sasolburg
4800



Project Manager:
Mr S Bila
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E-mail: sibusiso.bila@metsimaholo.gov.za

PREPARED BY:

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862 St Bernard Drive
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Project Engineer:
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E-mail: itumeleng@leko.co.za

| | | |
|-----------------------------------|----------|-------|
| Name of Company | : | |
| Contact Name | : | |
| Contact No | : | |
| Email Address | : | |
| CSD Supplier Number | : | ..... |
| CIDB: CRS Number | : | ..... |
| Tender Amount (VAT incl.): | R | ..... |

CHECK LIST FOR TENDER SUBMISSION

The Tenderer is to indicate in the check-boxes provided that he has completed the required section of the tender document. Completion of this check-list will assist the Tenderer in ensuring that he has attended to all the required items for submission with this Tender.

| Page | Description | | Completed | | For office use | | |
|-------|------------------|---|-----------|----|----------------|----|----------|
| | | | Yes | No | Yes | No | Comments |
| Cover | Name of Tenderer | | | | | | |
| | Tender Sum | | | | | | |
| | Schedule: 1A | Compulsory Enterprise Questionnaire | | | | | |
| | Schedule: 1B | Authority of Signatory | | | | | |
| | Schedule: 1C | Certificate of Authority for Joint Ventures (if applicable) | | | | | |
| | Schedule: 1D | Record of Addenda to Tender Documents | | | | | |
| | Schedule: 1E | Personnel Schedule | | | | | |
| | Schedule: 1F | Schedule of Plant and Equipment available for the Contract | | | | | |
| | Schedule: 1G | Schedule of Work satisfactorily carried out by the Tenderer | | | | | |
| | Schedule: 1H | Certificate of Attendance at Clarification Meeting | | | | | |
| | Schedule: 1I | Proposed Amendments and Qualifications | | | | | |
| | Schedule: 1J | Cashflow Projections Schedule | | | | | |
| | Schedule: 1K | Proof of CIDB Registration | | | | | |
| | Schedule: 1L | Proof of COID Registration | | | | | |
| | Schedule: 2A | Centralized Supplier Database (CSD) | | | | | |
| | Schedule: 2B | Proof of Authority of Signatory | | | | | |
| | Schedule: 2C | Original Valid Tax Clearance Certificate | | | | | |
| | Schedule: 2D | Reference Letters | | | | | |
| | Schedule: 2E | Organogram | | | | | |
| | Schedule: 2F | CVs and Qualification of Key Personnel | | | | | |
| | Schedule: 2G | Methodology | | | | | |
| | Schedule: 2H | Gantt Chart | | | | | |
| | Schedule: 2I | Proof of Plant Ownership | | | | | |
| | Schedule: 2J | JV Agreement | | | | | |
| | MBD Forms | MBD 4, MBD 5, MBD 6.1, MBD 8 AND MBD 9 | | | | | |
| | C1.1 | Form of Offer and Acceptance | | | | | |
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| | C2.2 | Completed Schedule of Quantities | | | | | |

RE-ADVERT: APPOINTMENT OF A 7 CE/GB OR HIGHER CIDB REGISTERED CONTRACTOR FOR THE CONSTRUCTION OF TOILETS AND SEWER NETWORK REPAIR IN GORTIN PHASE 1.

LIST OF CONTRACT DOCUMENTS

The following documents form part of this contract:

1. The General Conditions of Contract for Construction Works, Second Edition (GCC 2015), published by the South African Institute of Civil Engineers, which the Tenderer shall purchase himself (see note 1 below).
2. SANS 1200 The Standard Specifications for Civil Engineering Construction
3. The Standard Specifications for Toilets, 1998 Edition (COLTO) published by the South African Institute of Civil Engineers, which the Tenderer shall purchase himself
4. The Project Document containing the Tender Notice, Conditions of Tender, Tender Data, Returnable Schedules, Form of Offer, General and Particular Conditions of Contract, Pricing Schedule, Project Specifications and Site Information, issued by the Employer (see note 5 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 Tenderer has been appointed.
5. The civil drawings

Notes to Tenderer

1. **Volume 1 is obtainable from SAICE, Private Bag X200, Halfway House, 1685.**
Tel: +27 11 805 5947 Fax: +27 11 805 5971, email: civilinfo@saice.org.za.
Website: <http://www.saice.org.za>
2. **Volume 2 is obtainable from SA Bureau of Standards Dr Lategan Road; Groenkloof; Pretoria; 0001. Private Bag X191, Pretoria, 0001.**
3. **Volume 3 is obtainable from SAICE, Private Bag X200, Halfway House, 1685.**
Tel: +27 11 805 5947 Fax: +27 11 805 5971, email: civilinfo@saice.org.za.
Website: <http://www.saice.org.za>
4. **Volume 4 is issued at tender stage as per tender advertisement. The pricing data is available on request in Excel format**
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
4. **SUBMISSION OF TENDER – Refer to clause F2 in the Tender Data**
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.
5. **For alternative offers, the Tenderer shall refer to clause F2.12 in the Tender Data**

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REGISTERED CONTRACTOR FOR THE CONSTRUCTION OF TOILETS
AND SEWER NETWORK REPAIR IN GORTIN PHASE 1.**

BID NO.: 23/2023/24

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PART T1: TENDERING PROCEDURES

PART T2: RETURNABLE DOCUMENTS

T.1.1 TENDER NOTICE AND INVITATION TO TENDER



TENDER NOTICE

BID NO: 23/2023/24

METSIMAHOLO LOCAL MUNICIPALITY invites tenders for the **RE-ADVERT: APPOINTMENT OF A 7 CE/GB OR HIGHER CIDB REGISTERED CONTRACTOR FOR THE CONSTRUCTION OF TOILETS AND SEWER NETWORK REPAIR IN GORTIN PHASE 1.**

Tenderers should have a CIDB Contractor grading designation of 7 CE/ GB or higher.

Bid documents will be available during working hours upon payment of R1000.00 at The Municipal Building, 10 Fichardt Street, Sasolburg. Documents can also be downloaded for the e-tender portal www.e-tenders.gov.za for free.

Compulsory clarification meeting will be held on 04 April 2024 at 10:00am.

It is a pre-requisite that Bidders must be in good standing with SARS, have the requisite CIDB certificate, and must be registered on the Central Supplier Database (CSD).

The closing time and date for receipt of tenders is **25 April 2024, 11H00**. Bid documents, clearly marked **BID 23/2023/24 RE-ADVERT: APPOINTMENT OF A 7 CE/GB OR HIGHER CIDB REGISTERED CONTRACTOR FOR THE CONSTRUCTION OF TOILETS AND SEWER NETWORK REPAIR IN GORTIN PHASE 1** must be deposited in the bid box at the Municipal Building, 10 Fichardt Street, Sasolburg before the closing time. Bid documents will be opened in public soon after the closing time. Telegraphic, telephonic, telex, e-mail, facsimile and late tenders will not be accepted. Requirements for sealing, addressing, delivery, opening and assessment of tenders are stated in the Tender Data.

Service providers will be adjudicated according to the Supply Chain Management Policy using the 80/20-point system, based on the Preferential Procurement Policy Framework Act 5 of 2005 and MFMA, Act 56 of 2003 as well as the Broad-Based Black Economic Empowerment Act, Act 53 of 2003.

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

Administrative:

Mr S. Bila

Tel No. +27 16 973 8487

E-mail: sibusiso.bila@metsimaholo.gov.za

Technical:

Mr I. Bogoshi

Tel No. +27 12 993 1081

E-mail: itumeleng@leko.co.za

T1.2 CONDITIONS OF TENDER

T1.2 CONDITIONS OF TENDER

F.1 General

F.1.1 Actions

F.1.1.1 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, comply with all legal obligations and not engage in anticompetitive practices.

F.1.1.2 The employer and the tenderer and all their agents and employees involved in the tender process shall avoid conflicts of interest and where a conflict of interest is perceived or known, declare any such conflict of interest, indicating the nature of such conflict. Tenderers shall declare any potential conflict of interest in their tender submissions. Employees, agents and advisors of the employer shall declare any conflict of interest to whoever is responsible for overseeing the procurement process at the start of any deliberations relating to the procurement process or as soon as they become aware of such conflict, and abstain from any decisions where such conflict exists or recuse themselves from the procurement process, as appropriate.

- Note:
- 1) A conflict of interest may arise due to a conflict of roles which might provide an incentive for improper acts in some circumstances. A conflict of interest can create an appearance of impropriety that can undermine confidence in the ability of that person to act properly in his or her position even if no improper acts result.
 - 2) Conflicts of interest in respect of those engaged in the procurement process include direct, indirect or family interests in the tender or outcome of the procurement process and any personal bias, inclination, obligation, allegiance or loyalty which would in any way affect any decisions taken.

F.1.1.3 The employer shall not seek and a tenderer shall not submit a tender without having a firm intention and the capacity to proceed with the contract.

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 of tender, the following definitions apply:

- a) **conflict of interest** means any situation in which:
 - i) Someone in a position of trust has competing professional or personal interests which make it difficult to fulfil his or her duties impartially;
 - ii) an individual or organisation is in a position to exploit a professional or official capacity in some way for their personal or corporate benefit; or
 - iii) in compatibility or contradictory interests exist between an employee and the organisation which employs that employee.
- b) **comparative offer** means the tenderer's financial offer after all tendered parameters that will affect the value of the financial offer have been taken into consideration in order to enable comparisons to be made between offers on a comparative basis

- c) **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, *or any official in the public service or in the employ of an Organ of State*, in the tender process; and
- d) **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
- e) **organization** means a company, firm, enterprise, association or other legal entity, whether incorporated or not, or a public body
- f) **quality (functionality)** means the totality of features and characteristics of a product or service that bear on its ability to satisfy stated or implied needs
- g) **tenderer** means *any organisation who is represented by a duly authorised employee, partner, shareholder or director that responds to the Tender Notice by drawing tender documents*
- h) **these conditions of tender** mean *the Standard Conditions of Tender (as published and amended from time to time by the Construction Industry Development Board) and the employer's Special Conditions of Tender, the latter are demonstrated by appearing in italics.*

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 readily read, copied and recorded. Communications 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 *does not bind itself to accept the lowest or any other tender, and may, in addition*, 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 written 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 responsive tender offers re-issue a tender covering substantially the same scope of work within a period of six months (*measured between the relevant closing dates of the abandoned tender and the re-issued tender*) unless only one tender was received and such tender was returned unopened to the tenderer, *or if there is agreement by the participating tenderers.*

F.2 Tenderer's obligations

F.2.1 Eligibility

F.2.1.1 Submit a tender offer only if the tenderer satisfies the criteria stated in the tender data and the tenderer, or any of his principals, is not under any restriction to do business with the employer.

F.2.1.2 Notify the employer of any proposed material change in the capabilities or formation of the tendering entity (or both) or any other criteria which formed part of the qualifying requirements used by the employer as the basis in a prior process to invite the tenderer to submit a tender offer and obtain the employer's written approval to do so prior to the closing time for tenders.

F.2.2 Cost of tendering

Accept that, unless otherwise stated in the tender data, the employer will not compensate the tenderer for any costs incurred in the preparation and submission of a tender offer, including the costs of *attending any clarification meeting*) and any testing necessary to demonstrate that aspects of the offer complies with the 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, *regardless whether or not a tender offer is submitted*, 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 Compulsory Clarification meeting

Attend, where required, *in person or designate a suitably qualified person in the direct employ of the tenderer*, a 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. *Any variation or deviation based on a point for which clarity should have been requested may render a tenderer's offer non-responsive in terms of F.3.8.*

F.2.9 Insurance

Be aware that the extent of insurance to be provided by the employer (if any) might 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 *costs prescribed as being applicable to the specified pay items as well as 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 Unless otherwise stated in the tender data, submit alternative tender offers only if a main tender offer, strictly in accordance with all the requirements of the tender documents, is also submitted as well as a schedule that compares the requirements of the tender documents with the alternative requirements that are proposed. *Alternative tender offers shall not alter any contingency pay items provided in the tender documents, or offer fixed prices (except where such are provided in the postulated pricing schedule) or a fixed price contract.*

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.2.12.3 *Qualify a tender offer (except that no qualifications shall be in conflict with F.2.8) but undertake to do so by submitting such qualification in terms of F.2.12.1 and F.2.12.2.*

F.2.13 Submitting a tender offer

F.2.13.1 Submit one tender offer only, either as a single tendering entity or as a member in a joint venture to provide the whole of the works, services or supply identified in the contract data and described in the scope of works, 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 legibly in non-erasable 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 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 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 will 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.2.13.9 Accept that tender offers submitted by facsimile or e-mail will be rejected by the employer, unless stated otherwise in the tender data.

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 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 time stated in the tender data. Accept that proof of posting shall not be accepted as proof of delivery.

F.2.15.2 Accept that, if the employer extends the closing time 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 time 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 with or without any conditions attached to such extension.

F.2.16.3 Accept that a tender submission that has been submitted to the employer may only be *modified, corrected*, withdrawn or substituted by giving the employer written notice before the closing time for tenders that a tender is to be *modified, corrected*, withdrawn or substituted.

F.2.16.4 Where a tender submission is to be substituted, submit a substitute tender in accordance with the requirements of F.2.13 with the packages clearly marked as "SUBSTITUTE".

F.2.17 Clarification or withdrawal of tender offer after submission

F.2.17.1 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 or *adjusting of imbalanced rates*, by the adjustment of certain rates or item prices (or both). No change in the competitive position of tenderers or substance of the tender offer is sought, offered, or permitted.

F.2.17.2 *Accept that the employer may, at its sole discretion, accept a less favourable tender from those already received or invite fresh tenders if a tenderer, at any time after the opening of his tender offer but prior to the signing of a contract based on his tender offer:*

- a) *withdraws his tender; or*
- b) *gives notice of his inability to execute the contract in terms of his tender; or*
- c) *fails to sign a contract or furnish the performance security within the period fixed in the letter of award or any extended period fixed by the employer; or*
- d) *fails to comply with a request made in terms of F.2.17.1 or F.2.18.1,*

in which case such tenderer shall be automatically barred from tendering on any of the employer's future tenders for a period to be determined by the employer, but not less than twelve (12) months, from the date of tender closure. The employer may fully or partly exempt a tenderer from the provisions of this condition if he is of the opinion that the circumstances justify the exemption.

Note: Sub-clause F.2.17 does not preclude the negotiation of the final terms of the contract with a preferred tenderer following a competitive selection process, should the Employer elect to do so.

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 *and may invoke the same remedy as provided for under F.2.17.2.*

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

F.2.18.3 *Accept the employer's right, at its sole discretion, to appoint suitably qualified persons to report on the financial resources, standing with the South African Revenue Service regarding all taxes,*

management structure and ownership details of any tenderer and/or to verify the correctness of any information furnished to the employer in terms of F.2.17.1. Comply with the employer's request within the time stated in the request. Failure on the part of the tenderer to cooperate with such an inquiry shall entitle the employer to declare such tender offer as non-responsive and may invoke the same remedy as provided for under F.2.17.2.

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 requests from the tenderer

F.3.1.1 Unless otherwise stated in the tender data respond to a request for clarification received up to five working days before the tender closing time stated in the tender data and notify all tenderers who drew *tender* documents.

F.3.1.2 Consider any request to make a material change in the capabilities or formation of the tendering entity (or both) or any other criteria which formed part of the qualifying requirements used to prequalify a tenderer to submit a tender offer in terms of a previous procurement process and deny any such request if as a consequence: -

- a) an individual firm, or a joint venture as a whole, or any individual member of the joint venture fails to meet any of the collective or individual qualifying requirements;
- b) the new partners to a joint venture were not prequalified in the first instance, either as individual firms or as another joint venture; or
- c) in the opinion of the Employer, acceptance of the material change would compromise the outcome of the prequalification process.

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 that tender documents are available until three working days before the tender closing time stated in the tender data. If, as a result a tenderer applies for an extension to the closing time stated in the tender data, the Employer may grant such extension and, shall then notify all tenderers who drew *tender* documents.

F.3.3 Return late tender offers

Return tender offers *withdrawn in terms of F.2.16.3* or received after the closing 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 meeting 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 and, where applicable, the total of his prices, preferences claimed and time for completion 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 *equal to or more than* the minimum number of points for quality stated in the tender data, and announce the total price. Return unopened financial proposals to tenderers whose 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

F.3.7.1 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. *In addition, any such disqualification shall entitle the employer, at its sole discretion, to impose a specified period during which tender offers will not be accepted from the offending tenderer.*

F.3.7.2 *Communicate to other state tender boards, provincial tender boards or parastatal tender boards any tenderer disqualified in terms of special condition F.3.7.1.*

F.3.7.3 *Consider rejecting any tender offers received from tenderers who are involved in any form of litigation or legal proceedings by or against the Employer.*

F.3.7.4 *Reject any offer from a tenderer who has not purchased the tender documents in his own name or in the name of a fellow member of a joint venture.*

F.3.7.5 *Reject any offer from a tenderer that contains information or data that is not in compliance with the minimum key staff qualification requirements.*

F.3.8 Test for responsiveness

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

- a) complies with 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) significantly 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.

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 *unless it can be subsequently rendered responsive by correction of non-material deviations.*

F.3.9 Arithmetic errors, omissions, discrepancies and imbalanced unit rates

F.3.9.1 Check responsive tenders for discrepancies between amounts in words and amounts in figures. Where there is a discrepancy between the amounts in figures and the amount in words, the amount in words shall govern.

F.3.9.2 Check *responsive* tender offers for:

- a) the gross misplacement of the decimal point in any unit rate;
- b) omissions made in completing the pricing schedule or bills of quantities; or
- c) arithmetic errors in:
 - i) line-item totals resulting from the product of a unit rate and a quantity in bills of quantities or schedules of prices; or
 - ii) the summation of the prices.
- d) imbalanced unit rates.

F.3.9.3 Notify the tenderer of all errors or omissions that are identified in the tender offer and either confirm the tender offer as tendered or accept the corrected total of prices.

F.3.9.4 Where the tenderer elects to confirm the tender offer as tendered, correct the errors as follows:

- a) If bills of quantities or pricing schedules apply and there is an error in the line item total resulting from the product of the unit rate and the quantity, the line total shall govern and the rate shall be corrected. Where there is an obviously gross misplacement of the decimal point in the unit rate, the unit rate shall be corrected.
- b) 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 be *corrected*.
- c) *Where the unit rates are imbalanced request tenderers to amend and adjust any rates declared imbalanced by the employer while retaining the total of the prices derived after any adjustment made.*

F.3.9.5 Consider the rejection of a tender offer if the tenderer does not correct or accept the correction of his arithmetical errors or amend/adjust an imbalanced unit rate 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 them using the tender evaluation methods and associated evaluation criteria and weightings that are specified in the tender data.

F.3.11.2 Method 1: Financial offer

In the case of a financial offer:

- a) Rank tender offers from the most favourable to the least favourable comparative offer.
- b) Recommend the highest ranked tenderer for the award of the contract, unless there are compelling and justifiable reasons not to do so.
- c) Re-rank all tenderers should there be compelling and justifiable reasons not to recommend the highest ranked tenderer and recommend the highest ranked tenderer, unless there are compelling and justifiable reasons not to do so and the process set out in this sub clause is repeated.

F.3.11.3 Method 2: Financial offer and preference

In the case of a financial offer and preferences:

- a) Score each tender in respect of the financial offer made and preferences claimed, if any, in accordance with the provisions of F.3.11.7 and F.3.11.8.
- b) Calculate the total number of tender evaluation points (T_{EV}) in accordance with the following formula:

$$T_{EV} = N_{FO} + N_P$$

where: N_{FO} is the number of tender evaluation points awarded for the financial offer made in accordance with F.3.11.7;
 N_P is the number of tender evaluation points awarded for preferences claimed in accordance with F.3.11.8.

- c) Rank tender offers from the highest number of tender evaluation points to the lowest.
- d) Recommend the 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.
- e) Rescore and re-rank all tenderers should there be compelling and justifiable reasons not to recommend the tenderer with the highest number of tender evaluation points, and recommend the tenderer with the highest number of tender evaluation points, unless there are compelling and justifiable reasons not to do so and the process set out in this sub clause is repeated

F.3.11.4 Method 3: Financial offer and quality

In the case of a financial offer and quality:

- a) Score each tender in respect of the financial offer made and the quality offered in accordance with the provisions of F.3.11.7 and F.3.11.9, rejecting all tender offers that fail to score the minimum number of points for quality stated in the tender data, if any.
- b) Calculate the total number of tender evaluation points (T_{EV}) in accordance with the following formula:

$$T_{EV} = N_{FO} + N_Q$$

where: N_{FO} is the number of tender evaluation points awarded for the financial offer made in accordance with F.3.11.7;
 N_Q is the number of tender evaluation points awarded for quality offered in accordance with F.3.11.9.

- c) Rank tender offers from the highest number of tender evaluation points to the lowest.
- d) 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.

- e) Rescore and re-rank all tenderers should there be compelling and justifiable reasons not to recommend the tenderer with the highest number of tender evaluation points and recommend the tenderer with the highest number of tender evaluation points, unless there are compelling and justifiable reasons not to do so and the process set out in this sub clause is repeated.

F.3.11.5 Method 4: Financial offer, quality and preferences

In the case of a financial offer, quality and preferences:

- a) Score each tender in respect of the financial offer made, preference claimed, if any, and the quality offered in accordance with the provisions of F.3.11.7 to F.3.11.9, rejecting all tender offers that fail to score the minimum number of points for quality stated in the tender data, if any.
- b) Calculate the total number of tender evaluation points (T_{EV}) in accordance with the following formula, unless otherwise stated in the tender data:

$$T_{EV} = N_{FO} + N_P + N_Q$$

where: N_{FO} is the number of tender evaluation points awarded for the financial offer made in accordance with F.3.11.7;
 N_P is the number of tender evaluation points awarded for preferences claimed in accordance with F.3.11.8;
 N_Q is the number of tender evaluation points awarded for quality offered in accordance with F.3.11.9.

- c) Rank tender offers from the highest number of tender evaluation points to the lowest.
- d) Recommend the 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.
- e) Rescore and re-rank all tenderers should there be compelling and justifiable reasons not to recommend the tenderer with the highest number of tender evaluation points and recommend the tenderer with the highest number of tender evaluation points, unless there are compelling and justifiable reasons not to do so and the process set out in this sub clause is repeated.

F.3.11.6 Decimal places

Score financial offers, preferences and quality, as relevant, to two decimal places.

F.3.11.7 Scoring Financial Offers

Score the financial offers of remaining responsive tender offers using the following formula:

$$N_{FO} = W_1 \times A$$

where: N_{FO} is the number of tender evaluation points awarded for the financial offer.
 W_1 is the maximum possible number of tender evaluation points awarded for the financial offer as stated in the tender data.
 A is a number calculated using the formula and option described in Table F.1 as stated in the tender data.

Table F.1: Formulae for calculating the value of A

| Formula | Comparison aimed at achieving | Option 1 ^a | Option 2 ^a |
|---|---|-----------------------------------|-----------------------|
| 1 | Highest price or discount | $A = (1 + \frac{(P - P_m)}{P_m})$ | $A = P_m / P$ |
| 2 | Lowest price or percentage commission / fee | $A = (1 - \frac{(P - P_m)}{P_m})$ | $A = P_m / P$ |
| P_m is the comparative offer of the most favourable comparative offer (excluding all Provisional and Prime Cost Sums and the associated VAT). P is the comparative offer of the tender offer under consideration (excluding all Provisional and Prime Cost Sums and the associated VAT). | | | |

F.3.11.8 Scoring preferences

Confirm that tenderers are eligible for the preferences claimed in accordance with the provisions of the tender data and reject all claims for preferences where tenderers are not eligible for such preferences. Calculate the total number of tender evaluation points for preferences claimed in accordance with the provisions of the tender data.

F.3.11.9 Scoring quality

Score each of the criteria and sub-criteria for quality in accordance with the provisions of the tender data.

Calculate the total number of tender evaluation points for quality using the following formula:

$$N_Q = W_2 \times S_O / M_S$$

where: S_O is the score for quality allocated to the submission under consideration;
 M_S is the maximum possible score for quality in respect of a submission; and
 W_2 is the maximum possible number of tender evaluation points awarded for the quality as stated in the tender data.

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

Accept the tender offer, if in the opinion of the employer, it does not present any unacceptable commercial risk and only if the tenderer:

- a) is not under restrictions, or has principals who are under restrictions, preventing participating in the employer's procurement,
- b) can, as necessary and in relation to the proposed contract, demonstrate that he or she possesses the professional and technical qualifications, professional and technical competence, financial resources, equipment and other physical facilities, managerial capability, reliability, experience and reputation, expertise and the personnel, to perform the contract,
- c) has the legal capacity to enter into the contract,
- d) is not insolvent, in receivership, bankrupt or being wound up, has his affairs administered by a court or a judicial officer, has suspended his business activities, or is subject to legal proceedings in respect of any of the foregoing,
- e) complies with the legal requirements, if any, stated in the tender data, and
- f) is able, in the opinion of the employer, to perform the contract free of conflicts of interest.

F.3.14 Prepare contract documents

F.3.14.1 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, and
- c) other revisions agreed between the employer and the successful tenderer.

F.3.14.2 Complete the schedule of deviations attached to the form of offer and acceptance, if any.

F.3.15 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.3.16 Notice to unsuccessful tenderers

F.3.16.1 Notify the successful tenderer of the employer's acceptance of his tender offer by completing and returning one copy of the form of acceptance before the expiry of the validity period stated in the tender data, or agreed additional period.

F.3.16.2 After the successful tenderer has been notified of the employer's acceptance of the tender, notify other tenderers that their tender offers have not been accepted.

F.3.17 Provide copies of the contracts

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.

F.3.18 Provide written reasons for actions taken

Provide upon request written reasons to tenderers for any action that is taken in applying these conditions of tender, but withhold information which is not in the public interest to be divulged, which is considered to prejudice the legitimate commercial interests of tenderers or might prejudice fair competition between tenderers.

F.3.19 Delegation of authority

The Employer may delegate any power vested in him by virtue of these Conditions of Tender to an officer or employee of the Employer.

T1.3 TENDER DATA

The conditions of tender are the Standard Conditions of Tender as contained in Annex F of the CIDB Standard for Uniformity in Construction Procurement (May 2010) as published in Government Gazette No 33239, Board Notice 86 of 2010.

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 of inconsistency between it and the Standard Conditions of Tender.

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

| Sub- clause | Data |
|-------------|--|
| F1.1 | The Employer is Metsimaholo Local Municipality. |
| F1.2 | <p>The Project Document issued by the Employer consists of the following:</p> <p>THE TENDER</p> <p>Part T1: Tendering procedures:</p> <p style="padding-left: 40px;">T1.1 Tender notice and invitation to tender</p> <p style="padding-left: 40px;">T1.2 Tender Data</p> <p>Part T2: Returnable documents</p> <p style="padding-left: 40px;">T2.1 Returnable Schedules required for Tender Evaluation</p> <p style="padding-left: 40px;">T2.2 Other Documents required for Tender Evaluation</p> <p style="padding-left: 40px;">T2.3 Returnable Schedules that will be incorporated into the Contract</p> <p>THE CONTRACT</p> <p>Part C1: Agreements and contract data</p> <p style="padding-left: 40px;">C1.1 Form of Offer and Acceptance</p> <p style="padding-left: 40px;">C1.2 Agreement in terms of Occupation Health and Safety Act</p> <p style="padding-left: 40px;">C1.3 Form of Guarantee</p> <p style="padding-left: 40px;">C.1.4 Contract Data</p> <p>Part C2: Pricing data</p> <p style="padding-left: 40px;">C2.1 Pricing instructions</p> <p style="padding-left: 40px;">C2.2 Bills of quantities</p> <p>Part C3: Scope of work</p> <p>Part C4: Site information</p> <p style="padding-left: 40px;">Drawings</p> |

Tender data contd.

| Sub-clause | Data |
|-------------|---|
| F1.3 | The Tender Document is available upon payment of R1000.00 or can be downloaded free of charge from the e tender website. |
| F1.4 | <p>Name: Leko Engineering Consultants Address: 862 St Bernard drive, Garsfontein, Pretoria 0081 Contact person: Itumeleng Bogoshi Cell: +27 12 993 1081 E-mail: itumeleng@leko.co.za</p> |
| | Only those tenderers who are registered with the CIDB, or are capable of being so prior to the evaluation of submissions, in a contractor grading designation equal to 7CE/GB or higher than a contractor grading designation determined in accordance with the sum tendered, or a value determined in accordance with Regulation 25 (1B) or 25(7A) of the Construction Industry Development Regulations, for an 7CE/GB class of construction work, are eligible to have their tenders evaluated. |
| | <p>a) Only those tenderers who are registered with the CIDB, or are capable of being so prior to the evaluation of submissions, in a contractor grading designation equal to 7CE/GB or higher than a contractor grading designation determined in accordance with the sum tendered, or a value determined in accordance with Regulation 25 (1B) or 25(7A) of the Construction Industry Development Regulations, for an 7CE/GB class of construction work, are eligible to have their tenders evaluated.</p> <ol style="list-style-type: none"> every member of the joint venture is registered with the CIDB; the combined contractor grading designation calculated in accordance with the Construction Industry Development Regulations is equal to or higher than a contractor grading designation determined in accordance with the sum tendered for an 7CE/GB class of construction work or a value determined in accordance with Regulation 25 (1B) or 25(7A) of the Construction Industry Development Regulations. |
| F1.4 | <p>b) The following tenderers who are registered with the CIDB, or are capable of being so registered prior to the evaluation of submissions, are eligible to have their tenders evaluated:</p> <ol style="list-style-type: none"> contractors who have a contractor grading designation equal to or higher than a contractor grading designation determined in accordance with the sum tendered, or a value determined in accordance with Regulation 25 (1B) of 25(7A) of the Construction Industry Development Regulations, for an 7CE/GB class of construction work; and <ul style="list-style-type: none"> the employer is satisfied that such a contractor has the potential to develop and qualify to be registered in that higher grade as determined in accordance with the provisions of the CIDB Specification for Social and Economic Deliverables in Construction Works Contracts; and the employer agrees to provide the financial, management or other support that is considered appropriate to enable the contractor to successfully execute that contract. <p>c) Compulsory clarification meeting will be held on 04 April 2024 at 10:00 am</p> |

| | |
|-------|--|
| F2.1 | <p>Eligibility</p> <p>Only those tenderers who satisfy the following eligibility criteria and who provide the required evidence in their tender submissions are eligible to submit tenders and have their tenders evaluated:</p> <p>a) Only those tenderers who are registered with the CIDB, or are capable of being so prior to the evaluation of submissions, in a contractor grading designation equal to 7CE/GB or higher than a contractor grading designation determined in accordance with the sum tendered, or a value determined in accordance with Regulation 25 (1B) or 25(7A) of the Construction Industry Development Regulations, for a 7 CE/GB class of construction work, are eligible to have their tenders evaluated.</p> <p>Joint ventures are eligible to submit tenders provided that:</p> <ul style="list-style-type: none"> - every member of the joint venture is registered with the CIDB; - the combined contractor grading designation calculated in accordance with the Construction Industry Development Regulations is equal to or higher than a contractor grading designation determined in accordance with the sum tendered for a 7CE/GB class of construction work or a value determined in accordance with Regulation 25 (1B) or 25(7A) of the Construction Industry Development Regulations. |
| F2.1 | <p>b) The following tenderers who are registered with the CIDB, or are capable of being so registered prior to the evaluation of submissions, are eligible to have their tenders evaluated:</p> <p>I. contractors who have a contractor grading designation equal to or higher than a contractor grading designation determined in accordance with the sum tendered, or a value determined in accordance with Regulation 25 (1B) or 25(7A) of the Construction Industry Development Regulations, for an 7CE/GB class of construction work; and</p> <ul style="list-style-type: none"> • the employer is satisfied that such a contractor has the potential to develop and qualify to be registered in that higher grade as determined in accordance with the provisions of the CIDB Specification for Social and Economic Deliverables in Construction Works Contracts; and • the employer agrees to provide the financial, management or other support that is considered appropriate to enable the contractor to successfully execute that contract. <p>d) Compulsory clarification meeting will be held on 04 April 2024</p> |
| F2.10 | <p>a) The Valued Added Tax (VAT) rate shall be 15% or as otherwise provided for by legislation.</p> <p>b) The successful Tenderer shall be required to produce a VAT invoice that shall only be prepared once measurements and valuations for work done in terms of the contract offer have been agreed with the Employers agent and a certificate of payment issued.</p> <p>Payment of VAT to previously non-VAT vendors shall be processed from the month in which the Tenderers liability with the South African Revenue Services is effective.</p> |

| F2.11 | A Tender offer shall not be considered if alterations have been made to the forms of tender data or contract data (unless such alterations have been duly authenticated by the Tenderer) or if any particulars required therein have not been completed in all respects | | | | | | | | | | | | | | | | | | | | | |
|---------|--|---|-------------|-------|---|---------------|---|---|--|--|---|---|--|---|--------------------------------------|---|---|--------------------------------|---|---|---|---|
| F2.12 | No alternative tender offers will be considered | | | | | | | | | | | | | | | | | | | | | |
| F2.13.1 | The Tenderer may not make an offer for only part of the services as defined in the Scope of Work. | | | | | | | | | | | | | | | | | | | | | |
| F2.13.3 | Parts of each tender offer communicated on paper shall be submitted as original, plus 0 copies. Under no circumstances whatsoever may the tender forms be retyped or redrafted. | | | | | | | | | | | | | | | | | | | | | |
| F2.13.5 | <p>The Employer's address for delivery of tender offers and identification details to be shown on each tender offer package is: Municipal Building, 10 Fichardt Street, Sasolburg</p> <p>Location of tender box: As mentioned on the tender advertisement</p> | | | | | | | | | | | | | | | | | | | | | |
| F2.15 | The closing time for submission of Tender Offers is: 11:00 on 23 April 2024 Telephonic, telegraphic, telex, electronic or emailed tenders will not be accepted. | | | | | | | | | | | | | | | | | | | | | |
| F2.16 | The tender offer validity period is 90 days | | | | | | | | | | | | | | | | | | | | | |
| F2.17 | <div>Returnables</div> <table><tr><th>NO</th><th>RETURNABLES</th><th>NOTES</th></tr><tr><td>1</td><td>Form of Offer</td><td><ul style="list-style-type: none">Fully completed in handwriting and signed in black ink pen.</td></tr><tr><td>2</td><td>A copy of a CSD summary report OR CSD number.</td><td><ul style="list-style-type: none">CSD full report or summary report OR CSD number.Municipality may not make any award to a person whose tax matters are not complaint with SARS, please note that tax compliance will be verified before any award.</td></tr><tr><td>3</td><td>Proof of company registration documents with the Director's details must be attached.</td><td><ul style="list-style-type: none">The company registration documents must indicate the company and Director's details.In a case where the Director has changed names, proof of name change must be attached.</td></tr><tr><td>4</td><td>Fully completed and signed MBD forms</td><td><ul style="list-style-type: none">Fully Completed and signed in handwriting and in black ink pen.</td></tr><tr><td>5</td><td>Completed BOQ in black ink pen</td><td><ul style="list-style-type: none">Items not priced will be considered rated at R0.00 and cannot be re-priced after appointment</td></tr><tr><td>6</td><td>Fully Completed and signed MBD 5 form for Bidders quoted over R10 Million (Submitted Annual Financial Statements must clearly stating that they are Audited, Reviewed AFS won't be expected)</td><td><ul style="list-style-type: none">Submit Audited Financial Statements if required by law submit audited financial statements for the past 3 years or since the date of establishment if established within the past 3 years. Audited Financial Statements signed by the CA/RA/PR</td></tr></table> | NO | RETURNABLES | NOTES | 1 | Form of Offer | <ul style="list-style-type: none">Fully completed in handwriting and signed in black ink pen. | 2 | A copy of a CSD summary report OR CSD number. | <ul style="list-style-type: none">CSD full report or summary report OR CSD number.Municipality may not make any award to a person whose tax matters are not complaint with SARS, please note that tax compliance will be verified before any award. | 3 | Proof of company registration documents with the Director's details must be attached. | <ul style="list-style-type: none">The company registration documents must indicate the company and Director's details.In a case where the Director has changed names, proof of name change must be attached. | 4 | Fully completed and signed MBD forms | <ul style="list-style-type: none">Fully Completed and signed in handwriting and in black ink pen. | 5 | Completed BOQ in black ink pen | <ul style="list-style-type: none">Items not priced will be considered rated at R0.00 and cannot be re-priced after appointment | 6 | Fully Completed and signed MBD 5 form for Bidders quoted over R10 Million (Submitted Annual Financial Statements must clearly stating that they are Audited, Reviewed AFS won't be expected) | <ul style="list-style-type: none">Submit Audited Financial Statements if required by law submit audited financial statements for the past 3 years or since the date of establishment if established within the past 3 years. Audited Financial Statements signed by the CA/RA/PR |
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| | | Accountant & Director of the company (MBD 5 form) |
|---|---|--|
| 7 | Joint Venture Agreement (Must indicate the lead partner, if the bidders grading is not the same the lead partner must have the higher grading) | <ul style="list-style-type: none"> • If applicable submit a complete and signed JV agreement. • JV agreement stating who the lead partner is with the shared percentages. • Note: JV agreement must be as per CIDB regulation of 2001 regulation 25 (5)(a),(b) and (6) |
| NB! The following documents will not be accepted: for number 8, 9 and 10 Affidavits; Address confirmation letter; invoices from the body corporates or agents, rates and taxes of the lessor (without a lease agreement) and municipal tender / rates clearance letter. | | |
| 8 | Latest Municipal rates and taxes account for the COMPANY AND DIRECTORS/TRUSTEES/ MEMBERS/SHAREHOLDERS. | <ul style="list-style-type: none"> • Submit strictly March 2024 or April 2024 municipal rates & taxes statement must be attached • The submitted account must not be in arrears for more than 3 months. • In a case of Rates & Taxes Account being in a family member's name, ONLY MUNICIPAL Account where the address of the Account matches the address on the company registration documents will be accepted) if not in arrears for more than 3 months. |
| 9 | In the event of a tenant renting a lease agreement MUST be attached for the COMPANY AND DIRECTORS/TRUSTEES/ MEMBERS/SHAREHOLDERS. | The lease agreement must include the following: <ul style="list-style-type: none"> • A valid copy of the lease agreement must be signed by (both Lessor and lessee). • The lease agreement must indicate dates of commencement and expiry or duration. • In a case where the lease agreement has expired and there is a clause indicating an automatic renewal the original lease agreement and a confirmation letter signed by Lessor must be attached. • In the occasion where the lease agreement has expired the original lease agreement AND extension must be attached with commencement and expiry dates or duration. • In a case of lease agreement being in a family member's name, the lease agreement will be accepted if the address on the lease matches the address on the company registration documents, AND ONLY if the lease agreement is valid. |

| | | | |
|--|--|--|--|
| | 10 | Municipal rates and taxes for bidders who are from the rural areas for the COMPANY AND DIRECTORS/TRUSTEES/MEMBERS/SHAREHOLDERS. | <ul style="list-style-type: none"> In the event that the bidder is from the rural area a letter from the municipality that the area is not liable to pay municipal rates and taxes OR a signed letter from the chief indicating that the bidder is from that particular rural/tribal area. |
| | 11 | CIDB Grading | <ul style="list-style-type: none"> Copy of Company CIDB Grading designation 7CE/GB or Higher |
| | 12 | Compulsory Briefing Meeting | <ul style="list-style-type: none"> Signed attendance register from the Municipality |
| The following certificates/documents must be provided with the tender: | | | |
| <p><u>Failure to comply with the above mentioned terms and conditions will deem your bid to be disqualified.</u></p> <p><u>Bidders must keep a copy of a completed excel spreadsheet BOQ which may be required during the evaluation processes</u></p> | | | |
| <p>Functionality Returnable</p> <ul style="list-style-type: none"> Completion certificates of similar projects Plant Schedule and registrations Key Staff / Personnel CV Financial Stability | | | |
| F3.4 | Opening of Tender Submissions | | |
| F3.4.2 | Tenders will be opened in public soon after closing time and recording of received documents but not later than 11:00 of 23 April 2024 at the Tender office. Tenderers' names and total prices where practical will be read out | | |
| F3.5 | A two-envelope procedure will not be followed | | |
| F3.8.2 | The Employer shall reject a non-responsive tender offer and not allow it to be subsequently made responsive by correction or withdrawal of non-conforming deviation or reservation. | | |
| F3.11 | <p>Tenders will be evaluated for Functionality. Tenderers who qualify for Functionality will be evaluated further for Price and Preference only. Points for Functionality will not contribute to further evaluation. Tenderers who do not qualify will not be evaluated further. Functionality will be scored out of 100 points. A Tenderer who scores less than 75 points will automatically be disqualified.</p> <p>The 80/20 evaluation criteria will be used where Price will be allocated 80 points and Locality will be scored out of 20 points.</p> | | |
| F3.11.1 | The procedure for evaluation of responsive Tender Offers will be Method 4: Financial Offer, Functionality and Preferences. The responsive tender with the highest total points as defined below is the preferred tender | | |
| F3.11.2 | The financial offer will be scored in terms of Formula 2, Option 1 of Table F.1 of SANS 294:2004, which reads as follows: | | |

| | | | | |
|---------|---|---|---------------------------|----------------|
| | <p>Nfo = W1 x A</p> <p>Where: Nfo = number of tender evaluation points awarded for the financial offer; W180 points for rand value less than R50 000 000;</p> | | | |
| F3.11.3 | (a) Functionality will include the following: | | | |
| | Functionality | | 100 Points | |
| | A. PROJECT EXPERIENCE AND PERFORMANCE | | 40 | |
| | B. CONSTRUCTION PLANT | | 25 | |
| | C. COMPANY KEY PERSONNEL | | 25 | |
| | D. FINANCIAL STABILITY | | 10 | |
| | Total | | 100 | |
| | Minimum Threshold | | 75 | |
| | | | | |
| | Criteria | Evaluation Indicators | Points Allocated | Weight |
| | A. PROJECT EXPERIENCE AND PERFORMANCE | | | MAX. 40 POINTS |
| | Attach company experience with regards to Sewer reticulation/ bulk line projects Tenderer to complete Metsimaholo project reference form on page 31. Appointment letter attached must link with the reference form populated. | Required submission to claim points: 1. A minimum of one project must be submitted from a State/Government/ SOE. Non-submission of a state project will render any submission for experience as none responsive and Zero (00) point will be allocated for Company experience. 2. Project signed Appointment letter (letter must be within the past 10 years and the value of the project must be above R15 000 000.00) & fully completed Metsimaholo reference form on page 31 as a main contractor. For Top structures/ RDP/ Housing development projects, the appointment/ reference form must state that a sewer network was constructed | 10 Points per project | 40 |
| | B. CONSTRUCTION PLANT | | | MAX. 25 POINTS |
| | TLB X 1 | Vehicle Registration Certificates in a company or directors name/ Signed letter from Rental Company on rental company letterhead | 5 points if owned/ rented | Max 05 Points |

| | | | | |
|--|--|---|-----------|-----------------------|
| | Excavator X 1 | Vehicle Registration Certificates in a company or directors name/ Signed letter from Rental Company on rental company letterhead | 10 points | Max 10 Points |
| | Vacuum/ Combination/ Pressure Truck X 1 | Vehicle Registration Certificates in a company or directors name/ Signed letter from Rental Company on rental company letterhead include picture of truck. | 10 points | Max 10 Points |
| | C. COMPANY KEY PERSONNEL | BIDDERS MUST SUBMIT CVS AND COPIES OF QUALIFICATIONS. | | MAX. 25 POINTS |
| | Contracts Manager | Personnel 1- on permanent/contract basis, with NQF Level 7 in the built environment or higher qualification and SACPCMP as Pr CM, Pr CPM registration or ECSA registration certificate as a Pr. Eng, Pr. Tech or Pr. Techni. Eng with experience in construction projects of not less than six (6) years. NB: Submit CV and Copies of Qualifications | 6-8 Years | 5 points |
| | | | 8+ Years | 7 points |
| | Site Agent | Personnel 2- on permanent/contract basis, with NQF Level 6 or higher qualification with experience in bulk/ internal sewer reticulation construction contracts of not less than four (4) years. NB: Submit CV and Copies of Qualifications | 4-6 Years | 3 points |
| | | | 6+ Years | 5 points |
| | Survey Engineer | Personnel 3- on permanent/contract basis, is required to attach a National Diploma qualification or higher in surveying and have project construction experience of no less than 4 years. NB: Submit CV and Copies of Qualifications | 4-6 Years | 3 points |
| | | | 6+ Years | 5 points |
| | Foreman | Personnel 4- is required to have projects construction experience in Sewer internal/ bulk line projects of no less than 5 years. NB: Submit CV and Copies of Qualifications | 5-7 Years | 3 points |
| | | | 7+ Years | 5 points |

| | | | | |
|--|-------------------------------|--|---------------------------|---------------------------------------|
| | | | | |
| | Safety Officer | Personnel 5- Safety officer on permanent/contract basis, with related safety qualification and experience in construction projects of no less than five (5) years. NB: Submit CV and Copies of Qualifications | 5-7 Years 7+ Years | 1 point 3 points |
| | D. FINANCIAL STABILITY | | | MAX 10 POINTS |
| | Bank Rating Letter | Submit bank rating letter not older than 3 months of rating of A,B or C with a dated stamp/ date of issue | 10 Points | Max 10 POINTS |
| | MINIMUM SCORE | | | 75 |
| | TOTAL | | | 100 |

In order to qualify for the second round of evaluation the tenders must score a minimum of 75 functionality points.

Bidders must complete the following table; points will be allocated for the below mentioned key personnel.

| COMPANY KEY PERSONNEL | NAME AND SURNAME |
|-----------------------|------------------|
| Contracts Manager | |
| Site Agent | |
| Survey Engineer | |
| Foreman | |
| Safety Officer | |

Bidders must ensure that the same personnel and equipment are made available during site handover. If listed personnel are not available, they must be replaced by personnel with the same or higher qualification and experience.

The recommended bidders company personnel and completed projects may be verified before appointments can be finalised. Misrepresentation of information will lead to disqualification of the bidder and the bidder can be blacklisted on National Treasury database



SATISFACTORY LETTER - A

TO: METSIMAHOLO LOCAL MUNICIPALITY

I, the undersigned being duly authorized to do so, hereby furnish a reference to Metsimaholo Local Municipality relative to bid **23/2023/24** for the: **Re-advert: Appointment of a 7 CE/GB or higher CIDB registered contractor for the construction of toilets and sewer network repair in Gortin phase 1.**

| | |
|--------------------------------|--|
| Name of the company tendering | |
| Project Name | |
| Project Contract/Tender Number | |
| Contract Value | |
| Description of Scope of work | |
| Contract duration | |

Below questioner to be completed by the client only

| | |
|--|-----------------|
| 1. Was their project completed satisfactory? | Yes / No |
| <i>If No, please furnish details:</i> | |
| | |
| | |
| 2. Was the project constructed as per the approved scope of work? | Yes / No |
| <i>If No, please furnish details:</i> | |
| | |
| | |
| 3. Was the project completed within the approved timeframe? | Yes / No |
| 4. Would you recommend this contractor for similar work | Yes / No |

Name of authorized person: Signature:

Position

Telephone: E-mail:

Date:

Completed on behalf of (Name of Institution)

.....
NB: This document must be completed in full by the referee
and it to be included in the bid submission. Failure to adhere
to this requirement will result in the bidder not being allocated
points.

OFFICIAL INSTITUTION STAMP



SATISFACTORY LETTER - B

TO: METSIMAHOLO LOCAL MUNICIPALITY

I, the undersigned being duly authorized to do so, hereby furnish a reference to Metsimaholo Local Municipality relative to bid **23/2023/24** for the: **Re-advert: Appointment of a 7 CE/GB or higher CIDB registered contractor for the construction of toilets and sewer network repair in Gortin phase 1.**

| | |
|--------------------------------|--|
| Name of the company tendering | |
| Project Name | |
| Project Contract/Tender Number | |
| Contract Value | |
| Description of Scope of work | |
| Contract duration | |

Below questioner to be completed by the client only

| | |
|--|-----------------|
| 1. Was their project completed satisfactory? | Yes / No |
| <i>If No, please furnish details:</i> | |
| | |
| | |
| 2. Was the project constructed as per the approved scope of work? | Yes / No |
| <i>If No, please furnish details:</i> | |
| | |
| | |
| 3. Was the project completed within the approved timeframe? | Yes / No |
| 4. Would you recommend this contractor for similar work | Yes / No |

Name of authorized person: **Signature:**

Position

Telephone: **E-mail:**

Date:

Completed on behalf of (Name of Institution)

.....
NB: This document must be completed in full by the referee
and it to be included in the bid submission. Failure to adhere
to this requirement will result in the bidder not being allocated
points.

OFFICIAL INSTITUTION STAMP

SATISFACTORY LETTER - C

TO: METSIMAHOLO LOCAL MUNICIPALITY

I, the undersigned being duly authorized to do so, hereby furnish a reference to Metsimaholo Local Municipality relative to bid **23/2023/24** for the: **Re-advert: Appointment of a 7 CE/GB or higher CIDB registered contractor for the construction of toilets and sewer network repair in Gortin phase 1.**

| | |
|--------------------------------|--|
| Name of the company tendering | |
| Project Name | |
| Project Contract/Tender Number | |
| Contract Value | |
| Description of Scope of work | |
| Contract duration | |

Below questioner to be completed by the client only

| | |
|--|-----------------|
| 1. Was their project completed satisfactory? | Yes / No |
| <i>If No, please furnish details:</i> | |
| | |
| | |
| 2. Was the project constructed as per the approved scope of work? | Yes / No |
| <i>If No, please furnish details:</i> | |
| | |
| | |
| 3. Was the project completed within the approved timeframe? | Yes / No |
| 4. Would you recommend this contractor for similar work | Yes / No |

Name of authorized person: Signature:

Position

Telephone: E-mail:

Date:

Completed on behalf of (Name of Institution)

NB: This document must be completed in full by the referee and it to be included in the bid submission. Failure to adhere to this requirement will result in the bidder not being allocated points.

OFFICIAL INSTITUTION STAMP

SATISFACTORY LETTER - D

TO: METSIMAHOLO LOCAL MUNICIPALITY

I, the undersigned being duly authorized to do so, hereby furnish a reference to Metsimaholo Local Municipality relative to bid **23/2023/24** for the: **Re-advert: Appointment of a 7 CE/GB or higher CIDB registered contractor for the construction of toilets and sewer network repair in Gortin phase 1.**

| | |
|--------------------------------|--|
| Name of the company tendering | |
| Project Name | |
| Project Contract/Tender Number | |
| Contract Value | |
| Description of Scope of work | |
| Contract duration | |

Below questioner to be completed by the client only

| | |
|--|-----------------|
| 1. Was their project completed satisfactory? | Yes / No |
| <i>If No, please furnish details:</i> | |
| | |
| | |
| 2. Was the project constructed as per the approved scope of work? | Yes / No |
| <i>If No, please furnish details:</i> | |
| | |
| | |
| 3. Was the project completed within the approved timeframe? | Yes / No |
| 4. Would you recommend this contractor for similar work | Yes / No |

Name of authorized person: Signature:

Position

Telephone: E-mail:

Date:

Completed on behalf of (Name of Institution)

NB: This document must be completed in full by the referee and it to be included in the bid submission. Failure to adhere to this requirement will result in the bidder not being allocated points.

OFFICIAL INSTITUTION STAMP

SATISFACTORY LETTER - E

TO: METSIMAHOLO LOCAL MUNICIPALITY

I, the undersigned being duly authorized to do so, hereby furnish a reference to Metsimaholo Local Municipality relative to bid **23/2023/24** for the: **Re-advert: Appointment of a 7 CE/GB or higher CIDB registered contractor for the construction of toilets and sewer network repair in Gortin phase 1.**

| | |
|--------------------------------|--|
| Name of the company tendering | |
| Project Name | |
| Project Contract/Tender Number | |
| Contract Value | |
| Description of Scope of work | |
| Contract duration | |

Below questioner to be completed by the client only

| | |
|--|-----------------|
| 1. Was their project completed satisfactory? | Yes / No |
| <i>If No, please furnish details:</i> | |
| | |
| | |
| 2. Was the project constructed as per the approved scope of work? | Yes / No |
| <i>If No, please furnish details:</i> | |
| | |
| | |
| 3. Was the project completed within the approved timeframe? | Yes / No |
| 4. Would you recommend this contractor for similar work | Yes / No |

Name of authorized person: **Signature:**

Position

Telephone: **E-mail:**

Date:

Completed on behalf of (Name of Institution)

***NB:** This document must be completed in full by the referee and it to be included in the bid submission. Failure to adhere to this requirement will result in the bidder not being allocated points.*

OFFICIAL INSTITUTION STAMP

SATISFACTORY LETTER - F

TO: METSIMAHOLO LOCAL MUNICIPALITY

I, the undersigned being duly authorized to do so, hereby furnish a reference to Metsimaholo Local Municipality relative to bid **23/2023/24** for the: **Re-advert: Appointment of a 7 CE/GB or higher CIDB registered contractor for the construction of toilets and sewer network repair in Gortin phase 1.**

| | |
|--------------------------------|--|
| Name of the company tendering | |
| Project Name | |
| Project Contract/Tender Number | |
| Contract Value | |
| Description of Scope of work | |
| Contract duration | |

Below questioner to be completed by the client only

| | |
|--|-----------------|
| 1. Was their project completed satisfactory? | Yes / No |
| <i>If No, please furnish details:</i> | |
| | |
| | |
| 2. Was the project constructed as per the approved scope of work? | Yes / No |
| <i>If No, please furnish details:</i> | |
| | |
| | |
| 3. Was the project completed within the approved timeframe? | Yes / No |
| 4. Would you recommend this contractor for similar work | Yes / No |

Name of authorized person: Signature:

Position

Telephone: E-mail:

Date:

Completed on behalf of (Name of Institution)

***NB:** This document must be completed in full by the referee and it to be included in the bid submission. Failure to adhere to this requirement will result in the bidder not being allocated points.*

OFFICIAL INSTITUTION STAMP

NB: THE MUNICIPALITY RESERVES THE RIGHT TO VERIFY THE SUBMITTED FUNCTIONALITY DOCUMENTS

Tender data contd.

| Sub-clause | Data |
|--------------|--|
| F3.13 | Acceptance of Tender Offer |
| F3.13.1 | <p>Tender offers will only be accepted if:</p> <ul style="list-style-type: none"> a) the tenderer is registered on the Central Supplier Database (CSD) for the South African government (see https://secure.csd.gov.za/) b) the tenderer is in good standing with SARS according to the Central Supplier Database; c) the tenderer submits a letter of intent from an approved insurer undertaking to provide the Performance Bond to the format included in Part C1.3 of this procurement document d) the tenderer is registered with the Construction Industry Development Board in an appropriate contractor grading designation; e) the tenderer or any of its directors/shareholders is not listed on the Register of Tender Defaulters in terms of the Prevention and Combating of Corrupt Activities Act of 2004 as a person prohibited from doing business with the public sector; f) the tenderer has not: <ul style="list-style-type: none"> i. abused the Employer's Supply Chain Management System; or ii. failed to perform on any previous contract and has been given a written notice to this effect; g) the tenderer has completed the Compulsory Declaration and there are no conflicts of interest which may impact on the tenderer's ability to perform the contract in the best interests of the employer or potentially compromise the tender process; h) the tenderer is registered and in good standing with the compensation fund or with a licensed compensation insurer; i) the employer is reasonably satisfied that the tenderer has in terms of the Construction Regulations, 2014, issued in terms of the Occupational Health and Safety Act, 1993, the necessary competencies and resources to carry out the work safely. |
| F3.17 | The number of paper copies of signed contract to be provided by the Engineer is one (1). |



METSIMAHOLO LOCAL MUNICIPALITY

**RE-ADVERT: APPOINTMENT OF A 7 CE/GB OR HIGHER CIDB
REGISTERED CONTRACTOR FOR THE CONSTRUCTION OF
TOILETS AND SEWER NETWORK REPAIR IN GORTIN PHASE 1.**

BID NO.: 23/2023/24

PART T2 : RETURNABLE DOCUMENTS

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 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

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.



SCHEDULE A: MUNICIPAL BIDDING DOCUMENTS

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PART A

INVITATION TO BID

| YOU ARE HEREBY INVITED TO BID FOR REQUIREMENTS OF METSIMAHOLO LOCAL MUNICIPALITY | | | | | |
|--|--|---------------|---|---|-------|
| BID NUMBER: | 23/2023/24 | CLOSING DATE: | 11 DEC 2023 | CLOSING TIME: | 11h00 |
| DESCRIPTION | RE-ADVERT: APPOINTMENT OF A 7 CE/GB OR HIGHER CIDB REGISTERED CONTRACTOR FOR THE CONSTRUCTION OF TOILETS AND SEWER NETWORK REPAIR IN GORTIN PHASE 1. | | | | |
| THE SUCCESSFUL BIDDER WILL BE REQUIRED TO FILL IN AND SIGN A WRITTEN CONTRACT FORM (MBD7). | | | | | |
| BID RESPONSE DOCUMENTS MAY BE DEPOSITED IN THE BID BOX SITUATED AT (STREET ADDRESS) | | | | | |
| METSIMAHOLO LOCAL MUNICIPALITY | | | | | |
| NO 10 FICHARDT STREET | | | | | |
| FINANCE BUILDING | | | | | |
| GROUND FLOOR | | | | | |
| METSIMAHOLO LOCAL MUNICIPALITY | | | | | |
| SUPPLIER INFORMATION | | | | | |
| NAME OF BIDDER | | | | | |
| POSTAL ADDRESS | | | | | |
| STREET ADDRESS | | | | | |
| TELEPHONE NUMBER | CODE | | NUMBER | | |
| CELLPHONE NUMBER | | | | | |
| FACSIMILE NUMBER | CODE | | NUMBER | | |
| E-MAIL ADDRESS | | | | | |
| VAT REGISTRATION NUMBER | | | | | |
| TAX COMPLIANCE STATUS | TCS PIN: | | OR | CSD No: | |
| B-BBEE STATUS LEVEL VERIFICATION CERTIFICATE | <input type="checkbox"/> Yes <input type="checkbox"/> No [TICK APPLICABLE BOX] | | B-BEE STATUS LEVEL SWORN AFFIDAVIT <input type="checkbox"/> Yes <input type="checkbox"/> No | | |
| [A B-BBEE STATUS LEVEL VERIFICATION CERTIFICATE/ SWORN AFFIDAVIT (FOR EMES & QSEs) MUST BE SUBMITTED IN ORDER TO QUALIFY FOR PREFERENCE POINTS FOR B-BBEE] | | | | | |
| ARE YOU THE ACCREDITED REPRESENTATIVE IN SOUTH AFRICA FOR THE GOODS /SERVICES /WORKS OFFERED? | <input type="checkbox"/> Yes <input type="checkbox"/> No [IF YES ENCLOSE PROOF] | | ARE YOU A FOREIGN BASED SUPPLIER FOR THE GOODS /SERVICES /WORKS OFFERED? | <input type="checkbox"/> Yes <input type="checkbox"/> No [IF YES, ANSWER PART B:3] | |
| TOTAL NUMBER OF ITEMS OFFERED | | | TOTAL BID PRICE | R | |
| SIGNATURE OF BIDDER | | | DATE | | |
| CAPACITY UNDER WHICH THIS BID IS SIGNED | | | | | |



| | | | |
|--|--|--|--|
| | | | |
| BIDDING PROCEDURE ENQUIRIES MAY BE DIRECTED TO: | | TECHNICAL INFORMATION MAY BE DIRECTED TO: | |
| DEPARTMENT | SCM | DEPARTMENT | PMU |
| CONTACT PERSON | D. MONAHENG | CONTACT PERSON | S. BILA |
| TELEPHONE NUMBER | 016 973 8742 | TELEPHONE NO | 016 973 8487 |
| FACSIMILE NUMBER | | FACSIMILE NUMBER | |
| E-MAIL ADDRESS | dimpho.monaheng@ metsimaholo.gov.za | E-MAIL ADDRESS | Sibusiso.bila@ metsimaholo.gov.za |

MBD1

PART B

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 ONLINE | |
| 1.3. THIS BID IS SUBJECT TO THE PREFERENTIAL PROCUREMENT POLICY FRAMEWORK ACT 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 VIEW THE TAXPAYER'S PROFILE AND TAX STATUS. | |
| 2.3 APPLICATION FOR THE TAX COMPLIANCE STATUS (TCS) CERTIFICATE OR PIN MAY ALSO BE MADE VIA E-FILING. IN ORDER TO USE THIS PROVISION, TAXPAYERS WILL NEED TO REGISTER WITH SARS AS E-FILERS THROUGH THE WEBSITE WWW.SARS.GOV.ZA. | |
| 2.4 FOREIGN SUPPLIERS MUST COMPLETE THE PRE-AWARD QUESTIONNAIRE IN PART B:3. | |
| 2.5 BIDDERS MAY ALSO SUBMIT A PRINTED TCS CERTIFICATE TOGETHER WITH THE BID. | |
| 2.6 IN BIDS WHERE CONSORTIA / JOINT VENTURES / SUB-CONTRACTORS ARE INVOLVED, EACH PARTY MUST SUBMIT A SEPARATE TCS CERTIFICATE / PIN / CSD NUMBER. | |
| 2.7 WHERE NO TCS IS AVAILABLE BUT THE BIDDER IS REGISTERED ON THE CENTRAL SUPPLIER DATABASE (CSD), A CSD NUMBER MUST BE PROVIDED. | |
| 3. QUESTIONNAIRE TO BIDDING FOREIGN SUPPLIERS | |
| 3.1. IS THE ENTITY A RESIDENT OF THE REPUBLIC OF SOUTH AFRICA (RSA)? NO | <input type="checkbox"/> YES <input type="checkbox"/> |
| 3.2. DOES THE ENTITY HAVE A BRANCH IN THE RSA? NO | <input type="checkbox"/> YES <input type="checkbox"/> |
| 3.3. DOES THE ENTITY HAVE A PERMANENT ESTABLISHMENT IN THE RSA? NO | <input type="checkbox"/> YES <input type="checkbox"/> |
| 3.4. DOES THE ENTITY HAVE ANY SOURCE OF INCOME IN THE RSA? NO | <input type="checkbox"/> YES <input type="checkbox"/> |
| 3.5. IS THE ENTITY LIABLE IN THE RSA FOR ANY FORM OF TAXATION? NO | <input type="checkbox"/> YES <input type="checkbox"/> |
| 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 ABOVE. | |

NB: FAILURE TO PROVIDE ANY OF THE ABOVE PARTICULARS MAY RENDER THE BID INVALID.

NO BIDS WILL BE CONSIDERED FROM PERSONS IN THE SERVICE OF THE STATE.

SIGNATURE OF BIDDER:

CAPACITY UNDER WHICH THIS BID IS SIGNED:

DATE:

MBD 4

DECLARATION OF INTEREST

1. No bid will be accepted from persons in the service of the state¹.
2. Any person, having a kinship with persons in the service of the state, including a blood relationship, may make an offer or offers in terms of this invitation to bid. In view of possible allegations of favouritism, should the resulting bid, or part thereof, be awarded to persons connected with or related to persons in service of the state, it is required that the bidder or their authorised representative declare their position in relation to the evaluating/adjudicating authority.

3. In order to give effect to the above, the following questionnaire must be completed and submitted with the bid.

3.1 Full Name of bidder or his or her representative:

3.2 Identity Number:

3.3 Position occupied in the Company (director, trustee, shareholder²):

3.4 Company Registration Number:

3.5 Tax Reference Number:

3.6 VAT Registration Number:

3.7 The names of all directors / trustees / shareholders / members, their individual identity numbers and state employee numbers must be indicated in paragraph 4 below.

3.8 Are you presently in the service of the state? YES / NO

3.8.1 If yes, furnish particulars.

.....

¹MSCM Regulations: "in the service of the state" means to be –

- (a) a member of –
 - (i) any municipal council;
 - (ii) any provincial legislature; or
 - (iii) the national Assembly or the national Council of provinces;
- (b) a member of the board of directors of any municipal entity;
- (c) an official of any municipality or municipal entity;
- (d) an employee of any national or provincial department, national or provincial public entity or constitutional institution within the meaning of the Public Finance Management Act, 1999 (Act No.1 of 1999);
- (e) a member of the accounting authority of any national or provincial public entity; or
- (f) an employee of Parliament or a provincial legislature.

² Shareholder" means a person who owns shares in the company and is actively involved in the management of the company or business and exercises control over the company.

3.9 Have you been in the service of the state for the past twelve months?YES / NO

3.9.1 If yes, furnish particulars.....

.....

3.10 Do you have any relationship (family, friend, other) with persons?

in the service of the state and who may be involved with

the evaluation and or adjudication of this bid? YES / NO

3.10.1 If yes, furnish particulars.

.....

3.11 Are you, aware of any relationship (family, friend, other) between any other bidder

and any persons in the service of the state who may be involved with the evaluation

and or adjudication of this bid? YES / NO

3.11.1 If yes, furnish particulars

.....

.....

3.12 Are any of the company's directors, trustees, managers, principle shareholders or

stakeholders in service of the state? YES / NO

3.12.1 If yes, furnish particulars.

.....

.....

3.13 Are any spouse, child or parent of the company's directors, trustees, managers,

principle shareholders or stakeholders in service of the state?

YES / NO

3.13.1 If yes, furnish particulars.

.....

.....

3.14 Do you or any of the directors, trustees, managers,

principle shareholders, or stakeholders of this company

have any interest in any other related companies or
business whether or not they are bidding for this contract.

YES / NO

3.14.1 If yes, furnish particulars:

.....
.....

Full details of directors / trustees / members / shareholders.

| Full Name | Identity Number | State Employee Number |
|-----------|-----------------|-----------------------|
| | | |
| | | |
| | | |
| | | |
| | | |

**I ACCEPT THAT THE STATE MAY ACT AGAINST ME SHOULD THIS DECLARATION
PROVE TO BE FALSE.**

.....

Signature

.....

Date

.....

Capacity

.....

Name of Bidder

MBD 5

DECLARATION FOR PROCUREMENT ABOVE R10 MILLION (ALL APPLICABLE TAXES INCLUDED)

For all procurement expected to exceed R10 million (all applicable taxes included), bidders must complete the following questionnaire:

1 Are you by law required to prepare annual financial statements for auditing? **YES / NO**

1.1 If yes, submit audited annual financial statements for the past three years or since the date of establishment if established during the past three years.

.....
.....

2. Do you have any outstanding undisputed commitments for municipal services towards any municipality for more than three months or any other service provider in respect of which payment is overdue for more than 30 days? **YES / NO**

2.1 If no, this serves to certify that the bidder has no undisputed commitments for municipal services towards any municipality for more than three months or other service provider in respect of which payment is overdue for more than 30 days.

2.2 If yes, provide particulars.

.....
.....

* Delete if not applicable

3. Has any contract been awarded to you by an organ of state during the past five years, including particulars of any material non-compliance or dispute concerning the execution of such contract? **YES / NO**

3.1 If yes, furnish particulars

.....
.....



4. Will any portion of goods or services be sourced from outside the Republic, and, if so, what portion and whether any portion of payment from the municipality / municipal entity is expected to be transferred out of the Republic?

YES / NO

- 4.1 If yes, furnish particulars

.....

.....

CERTIFICATION

I, THE UNDERSIGNED (NAME)

CERTIFY THAT THE INFORMATION FURNISHED ON THIS DECLARATION FORM IS CORRECT.

I ACCEPT THAT THE STATE MAY ACT AGAINST ME SHOULD THIS DECLARATION PROVE TO BE FALSE.

.....
Signature

.....
Date

.....
Position

.....
Name of Bidder

MBD 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 of up to R50 000 000 (all applicable taxes included); and
- the 90/10 system for requirements with a Rand value above R50 000 000 (all applicable taxes included).

1.2 To be completed by the organ of state

- a) The applicable preference point system for this tender is the **80/20** preference point system.
- b) **80/20 preference point system** will be applicable in this tender. The lowest/ highest acceptable tender will be used to determine the accurate system once tenders are received.

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

- (a) Price; and
- (b) Specific Goals (Locality)

1.4 To be completed by the organ of state:

The maximum points for this tender are allocated as follows:

| | POINTS |
|---|--------|
| PRICE | 80 |
| Specific Goals (Locality) | 20 |
| Total points for Price and SPECIFIC GOALS | 100 |

- 1.5 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.
- 1.6 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:

$$Ps = 80 \left(1 - \frac{Pt - P_{min}}{P_{min}} \right) \quad \text{or} \quad Ps = 90 \left(1 - \frac{Pt - P_{min}}{P_{min}} \right)$$

80/20 or 90/10

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:

$$P_S = 80 \left(1 + \frac{Pt - P_{max}}{P_{max}} \right) \text{ or } P_S = 90 \left(1 + \frac{Pt - P_{max}}{P_{max}} \right)$$

Where

Ps = Points scored for price of tender under consideration

Pt = Price of tender under consideration

P_{max} = 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) |
|---|--|--|--|--|
| Locality | N/A | 80/20 | N/A | 80/20 |

Points Allocation

| Location | Points Allocation |
|---|-------------------|
| Bidder that is within the boundaries of the Metsimaholo Local Municipality | 20 |
| Bidder that is within the boundaries of the Fezile Dabi District Municipality | 15 |
| Bidder that is within the boundaries of the Free State Province | 10 |
| Bidder that is Outside the boundaries of the Free State Province | 05 |

Proof of locality

The following must be submitted for proof of locality:

- Municipal account in the name of the bidder not older than 90 days, or
- Lease agreement where the bidder is the lessee, or
- An official letter from the bank confirming the registered business address of the bidder. If the official letter does not indicate the address of the business a bank statement indicating the business address must be attached with a confirmation letter

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:

.....

.....

.....

MBD 8

DECLARATION OF BIDDER'S PAST SUPPLY CHAIN MANAGEMENT PRACTICES

- 1 This Municipal Bidding Document must form part of all bids invited.
- 2 It serves as a declaration to be used by municipalities and municipal entities in ensuring that when goods and services are being procured, all reasonable steps are taken to combat the abuse of the supply chain management system.
- 3 The bid of any bidder may be rejected if that bidder, or any of its directors have:
 - a. abused the municipality's / municipal entity's supply chain management system or committed any improper conduct in relation to such system;
 - b. been convicted for fraud or corruption during the past five years;
 - c. willfully neglected, reneged on or failed to comply with any government, municipal or other public sector contract during the past five years; or
 - d. been listed in the Register for Tender Defaulters in terms of section 29 of the Prevention and Combating of Corrupt Activities Act (No 12 of 2004).
- 4 **In order to give effect to the above, the following questionnaire must be completed and submitted with the bid.**

| Item | Question | Yes | No |
|-------|--|-------------------------------------|------------------------------------|
| 4.1 | <p>Is the bidder or any of its directors listed on the National Treasury's Database of Restricted Suppliers as companies or persons prohibited from doing business with the public sector?</p> <p>(Companies or persons who are listed on this Database were informed in writing of this restriction by the Accounting Officer/Authority of the institution that imposed the restriction after the <i>audi alteram partem</i> rule was applied).</p> <p>The Database of Restricted Suppliers now resides on the National Treasury's website(www.treasury.gov.za) and can be accessed by clicking on its link at the bottom of the home page.</p> | <p>Yes</p> <input type="checkbox"/> | <p>No</p> <input type="checkbox"/> |
| 4.1.1 | If so, furnish particulars: | | |
| 4.2 | <p>Is the bidder or any of its directors listed on the Register for Tender Defaulters in terms of section 29 of the Prevention and Combating of Corrupt Activities Act (No 12 of 2004)?</p> <p>The Register for Tender Defaulters can be accessed on the National Treasury's website (www.treasury.gov.za) by clicking on its link at the bottom of the home page.</p> | <p>Yes</p> <input type="checkbox"/> | <p>No</p> <input type="checkbox"/> |

| | | | |
|-------------|--|---------------------------------|--------------------------------|
| 4.2.1 | If so, furnish particulars: | | |
| 4.3 | Was the bidder or any of its directors convicted by a court of law (including a court of law outside the Republic of South Africa) for fraud or corruption during the past five years? | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| 4.3.1 | If so, furnish particulars: | | |
| Item | Question | Yes | No |
| 4.4 | Does the bidder or any of its directors owe any municipal rates and taxes or municipal charges to the municipality / municipal entity, or to any other municipality / municipal entity, that is in arrears for more than three months? | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| 4.4.1 | If so, furnish particulars: | | |
| 4.5 | Was any contract between the bidder and the municipality / municipal entity or any other organ of state terminated during the past five years on account of failure to perform on or comply with the contract? | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| 4.7.1 | If so, furnish particulars: | | |

CERTIFICATION

I, THE UNDERSIGNED (FULL NAME)CERTIFY THAT THE INFORMATION FURNISHED ON THIS DECLARATION FORM TRUE AND CORRECT.

I ACCEPT THAT, IN ADDITION TO CANCELLATION OF A CONTRACT, ACTION MAY BE TAKEN AGAINST ME SHOULD THIS DECLARATION PROVE TO BE FALSE.

.....
Signature

.....
Date

.....
Position

.....
Name of Bidder

MBD 9

CERTIFICATE OF INDEPENDENT BID DETERMINATION

- 1 This Municipal Bidding Document (MBD) must form part of all bids¹ invited.
- 2 Section 4 (1) (b) (iii) of the Competition Act No. 89 of 1998, as amended, prohibits an agreement between, or concerted practice by, firms, or a decision by an association of firms, if it is between parties in a horizontal relationship and if it involves collusive bidding (or bid rigging).² Collusive bidding is a *pe se* prohibition meaning that it cannot be justified under any grounds.
- 3 Municipal Supply Regulation 38 (1) prescribes that a supply chain management policy must provide measures for the combating of abuse of the supply chain management system, and must enable the accounting officer, among others, to:
 - a. takes all reasonable steps to prevent such abuse;
 - b. rejects the bid of any bidder if that bidder or any of its directors has abused the supply chain management system of the municipality or municipal entity or has committed any improper conduct in relation to such system; and
 - c. cancel a contract awarded to a person if the person committed any corrupt or fraudulent act during the bidding process or the execution of the contract.
- 4 This MBD serves as a certificate of declaration that would be used by institutions to ensure that, when bids are considered, reasonable steps are taken to prevent any form of bid-rigging.
- 5 In order to give effect to the above, the attached Certificate of Bid Determination (MBD 9) must be completed and submitted with the bid:

¹ Includes price quotations, advertised competitive bids, limited bids and proposals.

² Bid rigging (or collusive bidding) occurs when businesses, that would otherwise be expected to compete, secretly conspire to raise prices or lower the quality of goods and / or services for purchasers who wish to acquire goods and / or services through a bidding process. Bid rigging is, therefore, an agreement between competitors not to compete

CERTIFICATE OF INDEPENDENT BID DETERMINATION

I, the undersigned, in submitting the accompanying bid:

(Bid Number and Description)

in response to the invitation for the bid made by:

(Name of Municipality / Municipal Entity)

do hereby make the following statements that I certify to be true and complete in every respect:

I certify, on behalf

Of: _____ that:

(Name of Bidder)

1. I have read and I understand the contents of this Certificate;
2. I understand that the accompanying bid will be disqualified if this Certificate is found not to be true and complete in every respect;
3. I am authorized by the bidder to sign this Certificate, and to submit the accompanying bid, on behalf of the bidder;
4. Each person whose signature appears on the accompanying bid has been authorized by the bidder to determine the terms of, and to sign, the bid, on behalf of the bidder;
5. For the purposes of this Certificate and the accompanying bid, I understand that the word "competitor" shall include any individual or organization, other than the bidder, whether or not affiliated with the bidder, who:
 - (a) has been requested to submit a bid in response to this bid invitation;
 - (b) could potentially submit a bid in response to this bid invitation, based on their qualifications, abilities or experience; and
 - (c) provides the same goods and services as the bidder and/or is in the same line of business as the bidder
6. 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 consortium³ will not be construed as collusive bidding.
7. In particular, without limiting the generality of paragraphs 6 above, there has been no consultation, communication, agreement or arrangement with any competitor regarding:
 - (a) prices;
 - (b) geographical area where product or service will be rendered (market allocation)
 - (c) methods, factors or formulas used to calculate prices;

- (d) the intention or decision to submit or not to submit, a bid;
- (e) the submission of a bid which does not meet the specifications and conditions of the bid; or
- (f) bidding with the intention not to win the bid.
8. In addition, there have been no consultations, communications, agreements or arrangements with any competitor regarding the quality, quantity, specifications and conditions or delivery particulars of the products or services to which this bid invitation relates.
9. 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.
10. 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.

³ 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.

.....
Signature

.....
Date

.....
Position

.....
Name of Bidder

SCHEDULE B: 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.

| ADD. No | DATE | TITLE OR DETAILS |
|---------|------|------------------|
| 1 | | |
| 2 | | |
| 3 | | |
| 4 | | |
| 5 | | |
| 6 | | |
| 7 | | |
| 8 | | |

SIGNATURE:

SCHEDULE C: 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 |
|------|---------|-----------|------|
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

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 form part of this submission either separately as separate bunch of supporting documents or at the end of the this bid document and must be properly referenced.

SCHEDULE D: 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. The questionnaires for the other partners must be inserted after this questionnaire.**

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:

- | | |
|--|---|
| <input type="checkbox"/> a member of any municipal council | <input type="checkbox"/> 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) |
| <input type="checkbox"/> a member of any provincial legislature | <input type="checkbox"/> a member of an accounting authority of any national or provincial public entity |
| <input type="checkbox"/> a member of the National Assembly or the National Council of Province | <input type="checkbox"/> an employee of Parliament or a provincial legislature |
| <input type="checkbox"/> a member of the board of directors of any municipal entity | |
| <input type="checkbox"/> 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 |
| | | | |
| | | | |
| | | | |

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:

- | | |
|--|---|
| <input type="checkbox"/> a member of any municipal council | <input type="checkbox"/> 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) |
| <input type="checkbox"/> a member of any provincial legislature | |
| <input type="checkbox"/> a member of the National Assembly or the National Council of Province | |
| <input type="checkbox"/> a member of the board of directors of any municipal entity | <input type="checkbox"/> a member of an accounting authority of any national or provincial public entity |
| <input type="checkbox"/> an official of any municipality or municipal entity | <input type="checkbox"/> 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 |
| | | | |
| | | | |
| | | | |

Insert separate page if necessary

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

- 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;
- 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;
- 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;
- 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 _____



METSIMAHOLO LOCAL MUNICIPALITY

**RE-ADVERT: APPOINTMENT OF A 7 CE/GB OR HIGHER CIDB
REGISTERED CONTRACTOR FOR THE CONSTRUCTION OF
TOILETS AND SEWER NETWORK REPAIR IN GORTIN PHASE 1.**

BID NO.: 23/2023/24

THE CONTRACT

| | | |
|----------------|----------|-------------------------------------|
| PART C1 | : | AGREEMENTS AND CONTRACT DATA |
| PART C2 | : | PRICING DATA |
| PART C3 | : | SCOPE OF WORK |
| PART C4 | : | SITE INFORMATION |

PART C1: AGREEMENTS AND CONTRACT DATA

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:

BID NUMBER 23/2023/24: RE-ADVERT: APPOINTMENT OF A 7 CE/GB OR HIGHER CIDB REGISTERED CONTRACTOR FOR THE CONSTRUCTION OF TOILETS AND SEWER NETWORK REPAIR IN GORTIN PHASE 1.

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

By the representative of the Tenderer, deemed to be duly authorized, signing this part of this Form of Offer and Acceptance, the Tenderer 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:

R

(In words)

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 Tenderer before the end of the period of validity stated in the Tender Data, whereupon the Tenderer becomes the party named as the Contractor in the Conditions of Contract identified in the Contract Data.

Signature: (of person authorized to sign the tender):

Name: (of signatory in capitals):

Capacity: (of Signatory):

Name of Tenderer:
(organisation):

Address:

Telephone number: Fax number:

Cell phone number:

Witness:

Signature:

Name: (in capitals):

Date:

ACCEPTANCE

By signing this part of the Form of Offer and Acceptance, the Employer identified below accepts the Tenderer's Offer. In consideration thereof, the Employer shall pay the Contractor the amount due in accordance with the Conditions of Contract as set out in the General and Special Conditions of Contract, and identified in the Contract Data. Acceptance of the Tenderer's Offer shall form an agreement between the Employer and the Tenderer 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 1 Agreement and Contract Data, (which includes this Agreement)

Part 2 Pricing Data, including the Bill of Quantities

Part 3 Scope of Work

Part 4 Site Information

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

Deviations from and amendments to the documents listed in the Tender Data and any addenda thereto listed in the Tender Schedules as well as any changes to the terms of the Offer agreed by the Tenderer 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 authorized representatives of both parties.

The Tenderer shall deliver the Guarantee in terms of Clause 7 of the General Conditions of Contract 2004 within the period stated in the Contract Data, and he shall, immediately 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 other bonds, guarantees, proof of insurance and any other documentation to be provided in terms of the Conditions of Contract identified in the Contract Data, within 14 days of the date on which this Agreement comes into effect. Failure to fulfil any of these obligations in accordance with those terms shall constitute a repudiation of this Agreement.

Notwithstanding anything contained herein, this Agreement comes into effect on the date when the Tenderer receives the fully completed original of this document, including the Schedule of Deviations (if any). Unless the Tenderer (now Contractor) within five working 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.

Signature:

Name:

Capacity: Municipal Manager

For: METSIMAHOLO LOCAL MUNICIPALITY
10 FICHARDT STREET, SASOLBURG, 4800

Witness:Name:

Date:

SCHEDULE OF DEVIATIONS

The extent of deviations from the tender documents issued by the Employer prior to the tender closing date is limited to those permitted in terms of the Tender Data and the Conditions of Tender.

A Tenderer's covering letter will not necessarily be included in the final contract document. Should any matter in such letter, which constitutes a deviation as aforesaid becomes the subject of agreements reached during the process of offer and acceptance, the outcome of such agreement shall be recorded here.

Any other matter arising from the process of offer and acceptance either as a confirmation, clarification or change to the tender documents and which it is agreed by the Parties becomes an obligation of the contract shall also be recorded here.

Any change or addition to the tender documents arising from the above agreements and recorded here, shall also be incorporated into the final draft of the Contract.

1. Subject:

Details:

2. Subject:

Details:

3. Subject:

Details:

4. Subject:

Details:

5. Subject:

Details:

6. Subject:

Details:

By the duly authorised representatives signing this Schedule of Deviations, the Employer and the Tenderer agree to and accept the foregoing Schedule of Deviations as the only deviations from and



amendments to the documents listed in the Tender Data and addenda thereto as listed in the Tender Schedules, as well as any confirmation, clarification or change to the terms of the offer agreed by the Tenderer 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 tender documents and the receipt by the Tenderer 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 TENDERER:

Signature:

Name:

Capacity:

Witness:..

Name:

Date:

FOR THE EMPLOYER:

Signature:

Name:

Capacity:

Witness:..

Name:

Date:

C1.2 CONTRACT DATA

C1.2.1 CONDITIONS OF CONTRACT

GENERAL CONDITIONS OF CONTRACT

This Contract will be based on the "General Conditions of Contract for Construction Works –3rd Edition 2015, Third print", 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 sub-clause 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 1.1.2 DEFINITIONS, INTERPRETATIONS AND GENERAL PROVISIONS

Add the following definitions:

"Labour-based Construction" means the effective employment of appropriate technologies and labour-intensive construction methods on projects specifically designed to maximize the workforce with limited use of machines.

"Community" shall mean all persons deemed to reside in the immediate vicinity of the project.

CSC1.10 Add the following Sub-Clause 1.10:

Training will be provided by the employer through various training providers. Training will be theoretical and practical and will be conducted in class rooms and on site. No separate payment of any nature will be made to the contractor for attendance of training sessions by the contractor or the contractor's staff. The Construction Project Manager will program and manage all training to ensure limited disruption to the contractors and the overall project.

CSC 4.3 Compliance with applicable laws

CSC 3.2.4 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 2003 will in all respects be applicable to this contract."

CSC 4.4 Payment to subcontractor

Add the following:

"The above-mentioned procedure shall adhere to the **Preferential procurement regulations, 2011, pertaining to the Preferential Procurement Policy Framework Act, Act No. 5 of 2000, published by National Treasury on 1 December 2011** and to any

prescribed regulations of the FREESTATE Provincial Government pertaining to procurement.

CSC 5.7 PROGRESS OF THE WORKS

Add the following to Sub-Clause 5.7 :

Delete the last sentence and add the following:

The contractor shall within 3 days of receipt of notification submit to the Engineer in writing the action(s) the contractor intends to take to expedite the rate of progress, and within 7 days of receipt of notification implement such steps. The contractor shall as part of his actions submit to the Engineer a detailed revised program accommodating the agreed steps to meet the Due Completion date.

CSC 6.8.2: CONTRACT PRICE ADJUSTMENT SCHEDULE

Paragraph 1

Adjust the definitions of "L", "P", "M" and "F" in the 4th to the 7th subparagraphs 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"]

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

This Contract will be based on the "General Conditions of Contract for Construction Works 3RD Edition 2015", issued by the South African Institution of Civil Engineering. (Short title: "General Conditions of Contract 2015").

The above-mentioned General Conditions of Contract for Construction may be inspected at the offices of the Employer or the offices of the Employer's Agent. Tenderers shall obtain their own copies from the South African Institute of Civil Engineering

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

PART 1: DATA PROVIDED BY THE EMPLOYER

| Ref. Clause | Data provided by the Employer |
|-------------|--|
| 1.1.1.13 | The defect liability is 12 months , a time measured from the date of the certificate of Completion |
| 1.1.1.15 | The Employer is Metsimaholo Local Municipality |
| 1.1.1.16 | The Engineer is the firm Leko Engineering Consultants CC |
| 1.2.1 | <p>The Employer's address for receipt of communications is:</p> <p>Telephone: +27 16 973 8487 E-mail: sibusiso.bila@metsimaholo.gov.za Address (Physical): Municipal Offices, 10 Fichardt Street, Sasolburg, 4800</p> <p>The Engineer's address for receipt of communications is:</p> <p>Telephone: +27 79 226 6225 E-mail: itumeleng@leko.co.za Address (Physical) 862 St Bernard,Garsfontein, Pretoria, 0081</p> |
| 1.3.2 | The governing law is the law of South Africa. |
| 3.2.3 | The Engineer is required to obtain the specific approval of the Employer for Any expenditure in excess of the Tender Sum plus 10% contingencies.. |
| 5.3.1 | <p>The documentation required before commencement with Works execution are:</p> <ul style="list-style-type: none"> • Health and Safety Plan (Refer to Clause 4.3) • Initial programme (Refer to Clause 5.6)(In PDF,MS project) • Security/Performance guarantee (Refer to Clause 6.2) • All-risk Insurance (Refer to Clause 8.6) • Personnel Curriculum Vitae • Construction Methodology |
| 5.3.2 | The time to submit the documentation required before commencement with Works execution is 14 days . |
| 5.8.1 | The special non-working days are holidays and the builders break as recommended by the yearly BCCEI Circular |
| 5.13.1 | The penalty for failing to complete the Works is R2500 Monetary value per day. |
| 6.10.1.5 | The percentage advance on materials not yet built into the Permanent Works is 80% percentage. |
| 6.10.3 | The limit of retention money is 10% |

| Ref. Clause | Data provided by the Employer |
|-------------|--|
| 1.1.1.13 | The defect liability is 12 months , a time measured from the date of the certificate of Completion |
| 8.6.1.1.2 | All insurances are to be effected by the Contractor. All insurances are to be effected by the Contractor The value of the materials supplied by the Employer to be included in the insurance sum is: Nil. |
| 8.6.1.1.3 | The amount to cover the professional fees for repairing damage and loss to be included in the insurance sum is 20% of Contract sum. |
| 8.6.1.3 | The amount for the Coupon policy for special risks is The Contract Value |
| 8.6.1.3 | The limit of indemnity for liability insurance is R10 million. |
| 6.8.2 | Contract price adjustment is <i>NOT</i> applicable to this Contract. |
| 6.8 | Price adjustments for variations in the costs of special materials is Not applicable |

.....
SIGNATURE

C1.2.3 DATA PROVIDED BY THE TENDERER

Clause 6.8.3 of the GCC 2015:

| Special materials | Unit on which variation will be determined * | Rate or price for the base Month (Excl. VAT) ** |
|-------------------|--|---|
| Not applicable | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |

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



C1.3 FORM OF GUARANTEE

BID NO 23/2023/24

WHEREAS **METSIMAHOLO LOCAL MUNICIPALITY** (hereinafter referred to as the Employer") entered into, a Contract with:

.....
(hereinafter called "the Contactor") on the day of 20.....,
for **RE-ADVERT: APPOINTMENT OF A 7 CE/GB OR HIGHER CIDB REGISTERED CONTRACTOR
FOR THE CONSTRUCTION OF TOILETS AND SEWER NETWORK REPAIR IN GORTIN PHASE 1.**

AND WHEREAS it is provided by such Contract that the Contractor shall provide the Employer with security by way of a guarantee for the due and faithful fulfilment of such Contract by the Contractor;

AND WHEREAS has / have at the request of the Contractor, agreed to give such guarantee;

NOW THEREFORE WE do hereby guarantee and bind ourselves jointly and severally as Guarantor and Co-Principal Debtors to the Employer under renunciation of the benefits of division and excussion for the due and faithful performance by the Contractor of all the terms and conditions of the said Contract, subject to the following conditions:

1. The Employer shall, without reference and / or notice to us, have complete liberty of action to act in any manner authorized and/or contemplated by the terms of the said Contract, and/or to agree to any modifications, variations, alterations, directions or extensions of the completion date of the works under the said Contract, and that its rights under this guarantee shall in no way be prejudiced nor our liability hereunder be affected by reason of any steps which the Employer may take under such Contract, or of any modification, variation, alterations of the completion date which the Employer may make, give, concede or agree to under the said Contract.
2. This guarantee shall be limited to the payment of a sum of money.
3. The Employer shall be entitled, without reference to us, to release any guarantee held by it, and to give time to or compound or make any other arrangement with the Contractor.
4. This guarantee shall remain in full force and effect until the issue of the Certificate of Completion in terms of the Contract, unless we are advised in writing by the Employer before the issue of the said Certificate of his intention to institute claims, and the particulars thereof, in which event this guarantee shall remain in full force and effect until all such claims have been paid or liquidated.
5. Our total liability hereunder shall not exceed the Guaranteed Sum of Rand (in words); R (in figures)
6. The Guarantor reserves the right to withdraw from this guarantee by depositing the Guaranteed Sum with the beneficiary, whereupon our liability hereunder shall cease.
7. We hereby choose our address for the serving of all notices for all purposes arising here from as

.....
.....
.....
.....



IN WITNESS WHEREOF this guarantee has been executed by us at
on this day of 20

Signature

Duly authorized to sign on behalf of

Address
.....
.....

As witnesses:

1

2

C1.4 ADJUDICATOR'S AGREEMENT **(Pro Forma only)**

To be entered into when required

This agreement is made on the day of between:

. (name of company / organisation)
of
. (address) and
. (name of company / organization)
of
. (address)
(the Parties) and
. (name)
of
. (address)

(the Adjudicator).

Disputes or differences may arise/have arisen* between the Parties under a Contract dated
. and known as.
and these disputes or differences shall be/have been* referred to adjudication in accordance with GCC
2004, Clause 58.3, and the Adjudicator may be / has been* requested to act.

* Delete as necessary

IT IS NOW AGREED as follows:

1. The adjudication shall be conducted in accordance with the rights and obligations of the Adjudicator and the Parties as set out in the Procedure as per Clause 58.3.1 of the GCC 04.
2. The Adjudicator hereby accepts the appointment and agrees to conduct the adjudication in accordance with the Procedure.
3. The Parties bind themselves jointly and severally to pay the Adjudicator's fees and expenses in accordance with the Procedure.
4. The Parties and the Adjudicator shall at all times maintain the confidentiality of the adjudication and shall endeavour to ensure that anyone acting on their behalf or through them will do likewise, save with the consent of the other Parties which consent shall not be unreasonably refused.
5. The Adjudicator shall inform the Parties if he intends to destroy the documents which have been sent to him in relation to the adjudication and he shall retain documents for a further period at the request of either Party.
6. The Adjudicator shall be paid at the hourly rate of R. in respect of all time spent upon, or in connection with, the adjudication including time spent travelling.
7. The Adjudicator shall be reimbursed in respect of all disbursements properly made including, but not restricted to:
 - (a) Printing, reproduction and purchase of documents, drawings, maps, records and photographs.

-
- (b) Telegrams, telex, faxes, and telephone calls.
(c) Postage and similar delivery charges.
(d) Travelling, hotel expenses and other similar disbursements.
(e) Room charges.
(f) Charges for legal or technical advice obtained in accordance with the Procedure.
8. The Adjudicator shall be paid an appointment fee of R This fee shall become payable in equal amounts by each Party within 14 days of the appointment of the Adjudicator, subject to an Invoice being provided. This fee will be deducted from the final statement of any sums which shall become payable under item 6 and/or item 7. If the final statement is less than the appointment fee the balance shall be refunded to the Parties.
9. The Adjudicator is/is not* currently registered for VAT.
10. Where the Adjudicator is registered for VAT it shall be charged additionally in accordance with the rates current at the date of invoice.
11. All payments, other than the appointment fee (item 8) shall become due 7 days after receipt of invoice, thereafter interest shall be payable at 5% per annum above the Reserve Bank base rate for every day the amount remains outstanding.

SIGNED

by: _____

Name:

who warrants that he / she is
duly authorized to sign for and
on behalf of the first Party in the
presence of

Witness

Name: _____

Address: _____

Date: _____

SIGNED

by: _____

Name:

who warrants that he / she is
duly authorized to sign for and
on behalf of the second Party in
the presence of

Witness:

Name _____

Address: _____

Date: _____

SIGNED

by: _____

Name:

the Adjudicator in the presence
of

Witness:

Name: _____

Address: _____

Date: _____

* Delete as necessary



METSIMAHOLO LOCAL MUNICIPALITY

**RE-ADVERT: APPOINTMENT OF A 7 CE/GB OR HIGHER CIDB
REGISTERED CONTRACTOR FOR THE CONSTRUCTION OF
TOILETS AND SEWER NETWORK REPAIR IN GORTIN PHASE 1.**

BID NO.: 23/2023/24

PART C2: PRICING DATA

C2.1 PRICING INSTRUCTIONS – CIVIL

1. Measurement and payment shall be in accordance to SANS 1200.
2. The units of measurement described in the Bill of Quantities are metric units. Abbreviations used in the Bill of Quantities are as follows:

| | | |
|----------------------|---|-----------------------|
| % | = | percent |
| h | = | hour |
| ha | = | hectare |
| kg | = | kilogram |
| kl | = | kiloliter |
| km | = | kilometer |
| km-pass | = | kilometer-pass |
| kPa | = | kilopascal |
| kW | = | kilowatt |
| ℓ | = | liter |
| m | = | meter |
| mm | = | millimeter |
| m ² | = | square meter |
| m ² -pass | = | square meter-pass |
| m ³ | = | cubic meter |
| m ³ .km | = | cubic meter-kilometer |
| MN | = | mega newton |
| MN.m | = | mega newton-meter |
| MPa | = | megapascal |
| No. | = | number |
| Prov sum | = | Provisional Sum |
| PC sum | = | Prime Cost Sum |
| R/only | = | rate only |
| Sum | = | lump sum |
| t | = | ton (1000 kg) |
| W/day | = | work day |

3. For the purpose 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 SANS 1200 |
| 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.
5. It will be assumed that prices included in the Bill of Quantities are based on Acts, Ordinances, Regulations, By-laws, International Standards and National Standards that were published 28 days before the closing date for tenders. (Refer to www.stanza.org.za or www.iso.org for information on standards).

6. The prices and rates in the Bill of Quantities are fully inclusive prices for the work described under the items. Such prices and rates cover all costs and expenses that may be required in and for the execution of the Works described in accordance with the provisions of the Scope of Work, and shall cover the cost of all general risks, liabilities, and obligations set forth or implied in the Contract Data, as well as overhead charges and profit. These prices will be used as a basis for assessment of payment for additional work that may have to be carried out.
7. Where the Scope of Work requires detailed drawings and designs or other information to be provided, all costs associated therewith are deemed to have been provided for and included in the unit rates and sum amounts tendered under such items.
8. An item against which no price is entered will be considered to be covered by the other prices or rates in the Bill of Quantities. A single lump sum will apply should a number of items be grouped together for pricing purposes.
9. The quantities set out in the Bill of Quantities are approximate and do not necessarily represent the actual amount of work to be done. The quantities of work accepted and certified for payment will be used for determining payments due and not the quantities given in the Bill of Quantities.
10. 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 entailed under each item appear in the Scope of Work.
11. The item numbers appearing in the Bill of Quantities refer to the corresponding item numbers in the "SANS 1200 as prepared by South African National Roads Agency Limited" and additional Project Specifications as per the Scope of Work.
12. 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.
13. 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.

C2.3

BILL OF QUANTITIES

RE-ADVERT: APPOINTMENT OF A 7 CE/GB OR HIGHER CIDB REGISTERED CONTRACTOR FOR THE CONSTRUCTION OF TOILETS AND SEWER NETWORK REPAIR IN GORTIN PHASE 1.

BID NO.: 23/2023/24

| ITEM | PAYMEN REFERS | DESCRIPTION | UNIT | QUAN- TITY | RATE | AMOUNT |
|-------|----------------------|---|-----------|---------------|------------|--------------|
| A1 | SANS 1200A 8.3 | SECTION A: GENERAL | | | | |
| | | Fixed charge items: | | | | |
| A1.1 | 8.3.1 | Contractual requirements | Sum | 1 | | |
| | PSA 8.3.2 | Establishment of facilities on site | | | | |
| A1.2 | 8.3.2.1 | a) Facilities for the Engineer, including two contract name boards, printer, mobile phone, modem, sanitation, carport and a site office as specified in the project specifications | Sum | 1 | | |
| A1.3 | 8.3.2.2 | b) Establishment of facilities on Site for Contractor including: Offices, storage sheds, workshops, ablution and latrine facilities, tools and survey equipment, water supplies, electric power, communications, survey assistant, dealing with access and setting out of works | Sum | 1 | | |
| A1.4 | 8.3.3 | c) Other fixed-charge obligations | Sum | 1 | | |
| A1.5 | 8.3.4 | d) Removal of Site establishment on completion of the Works | Sum | 1 | | |
| A2 | 8.4 | Time-related charges: | | | | |
| A2.1 | 8.4.1 | a) Contractual requirements | month | 20 | | |
| A2.2 | 8.4.2.1 | Operate and maintain facilities on site for Engineer as Item A1.2 | Sum | 1 | | |
| A2.3 | 8.4.2.2 | b) Operate and maintain facilities on Site for Contractor as Item A1.3 | Sum | 1 | | |
| A2.5 | 8.4.4 | Company and Head Office overhead costs for | | | | |
| | | c) duration of Contract | Sum | 1 | | |
| A2.6 | 8.4.5 | d) Other time-related obligations | Sum | 1 | | |
| A3 | PSA 8.6 | Prime Cost Sums: | | | | |
| A3.1 | | a) Additional tests required by the Engineer | PC. Sum | 1 | 20,000.00 | R 20,000.00 |
| A3.2 | | b) Charge required by Contractor on subitem A3.1 above | % | 20,000.00 | | |
| A3.3 | | c) Cellphone allowance for the Engineer for the duration of the contract | Prov. Sum | 1 | 50,000.00 | R 50,000.00 |
| A3.4 | | d) Overheads, Charges and Profit on item A3.3 above | % | 50,000.00 | | |
| A3.5 | | e) Transportation for the Engineer for the duration of the contract (R12000 pm) | Prov. Sum | 1 | 150,000.00 | R 150,000.00 |
| A3.6 | | f) Overheads, Charges and Profit on item A3.5 above | % | 150,000.00 | | |
| A3.7 | | g) Accomodation for the Engineer for the duration of the contract (R25000 pm). | Prov. Sum | 1 | 350,000.00 | R 350,000.00 |
| A3.8 | | h) Overheads, Charges and Profit on item A3.7 above | % | 350,000.00 | | |
| A3.9 | | i) Equipment for the Engineer | Prov. Sum | 1 | 50,000.00 | R 50,000.00 |
| A3.10 | | j) Overheads, Charges and Profit on item A3.9 above | % | 50,000.00 | | |
| A3.11 | | k) Removal and re-establishment of existing services by Telkom, Eskom and/or the Local Authority | Prov Sum | 1 | 350,000.00 | R 350,000.00 |
| | | Carried forward | | | | |

RE-ADVERT: APPOINTMENT OF A 7 CE/GB OR HIGHER CIDB REGISTERED CONTRACTOR FOR THE
CONSTRUCTION OF TOILETS AND SEWER NETWORK REPAIR IN GORTIN PHASE 1.

BID NO.: 23/2023/24

| ITEM | PAYMEN REFERS | DESCRIPTION | UNIT | QUAN- TITY | RATE | AMOUNT |
|-------|------------------|---|-----------|---------------|------------|--------------|
| | | Brought forward | | | | |
| A3.12 | | l) Overheads, Charges and Profit on item A3.11 above | % | 350,000.00 | | |
| A3.13 | | m) Allow for supervision by the Engineer's Site Representative for the duration of the Contract | Prov Sum | 1 | 610,000.00 | R 610,000.00 |
| A3.14 | | n) Overheads, Charges and Profit on item A3.13 above | % | 610,000.00 | | |
| A4 | | .02 Topographical Survey | | | | |
| A4.1 | | a) Ad-hoc survey as requested by the Engineer. | Prov Sum | 1 | 30,000.00 | R 30,000.00 |
| A4.2 | | b) Overheads, Charges and profit on item A4.1 above | % | 30,000.00 | | |
| A5 | | .03 Community Liaison Officer | | | | |
| A5.1 | | a) Employment of CLO for the duration of the contract (R5000 pm plus R300 pm cellphone allowance) | Prov. Sum | 1 | 63,600.00 | R 63,600.00 |
| A5.2 | | b) Overheads, Charges and Profit on item A5.1 above | % | 63,600.00 | | |
| A5.3 | | c) Employment of PSC for duration of contract (4 No. at R500 pm each) | Prov. Sum | 1 | 24,000.00 | R 24,000.00 |
| A5.4 | | d) Overheads, Charges and Profit on item A5.3 above | % | 24,000.00 | | |
| A5.5 | | e) Liaison with ISD consultant, CLO and local affected individuals and communities | Prov. Sum | 1 | 120,000.00 | R 120,000.00 |
| A5.6 | | g) Overheads, Charges and Profit on item A5.5 above | % | 120,000.00 | | |
| A6 | | .04 Environmental and OHS Officers | | | | |
| A6.1 | | a) Cost of Environmental Compliance Officer (R16000 pm) | Prov Sum | 1 | 288,000.00 | R 288,000.00 |
| A6.2 | | b) Overheads, Charges and Profit on item A6.1 above | % | 288,000.00 | | |
| A6.3 | | c) Cost of Employer's OHS representative | Prov Sum | 1 | 192,000.00 | R 192,000.00 |
| A6.4 | | d) Overheads, Charges and Profit on item A6.3 above | % | 192,000.00 | | |
| A7 | PSA 8.7 | Dayworks | | | | |
| | | .01 Labour | | | | |
| A7.1 | | a) Team leader / charge hand | hr | 50 | | |
| A7.2 | | b) Artisan | hr | 50 | | |
| A7.3 | | c) Skilled | hr | 100 | | |
| A7.4 | | d) Semi-skilled | hr | 200 | | |
| A7.5 | | e) Unskilled | hr | 200 | | |
| A8 | | .02 Plant | | | | |
| A8.1 | | a) For plant used in execution of dayworks As agreed with engineer | PC Sum | 1 | 30,000.00 | R 30,000.00 |
| A8.2 | | b) Overheads, Charges and Profit on item A8.1 above As agreed with engineer | % | 30,000.00 | | |
| A8.2 | | b) Overheads, Charges and Profit on item A8.1 above | % | 30,000.00 | | |
| | | Carried forward | | | | |

RE-ADVERT: APPOINTMENT OF A 7 CE/GB OR HIGHER CIDB REGISTERED CONTRACTOR FOR THE
CONSTRUCTION OF TOILETS AND SEWER NETWORK REPAIR IN GORTIN PHASE 1.

BID NO.: 23/2023/24

| ITEM | PAYMEN REFERS | DESCRIPTION | UNIT | QUAN- TITY | RATE | AMOUNT |
|---|------------------|--|--------|---------------|------------|--------------|
| | | Brought forward | | | | |
| A9 | | .03 Materails | PC Sum | 1 | 30,000.00 | R 30,000.00 |
| A9.1 | | a) For materials used in execution of dayworks as agreed with engineer | | | | |
| A9.2 | | b) Overheads, Charges and Profit on item A9.1 above | % | 30,000.00 | | |
| A10 | 8.8. | Temporary works | | | | |
| | 8.8.4 | Existing services | | | | |
| A10.1 | | c) Excavation by hand in soft material to expose existing services | m³ | 200 | | |
| A11 | PSA 8.8.4 | Location and protection of existing services: | | | | |
| | | .01 Provision of detecting devices for: | | | | |
| A11.1 | | a) Water and sewer pipes | PC Sum | 1 | 350,000.00 | R 350,000.00 |
| A11.2 | | b) Electrical and other cables | PC Sum | 1 | 150,000.00 | R 150,000.00 |
| A11.3 | | c) Overheads, Charges and Profit on item A11.1 and A11.2 above | % | 500,000.00 | | |
| A12 | PSA 8.4.6 | Contractor's initial obligations in respect of the OH&S Act and Construction Regulations, 2014 | Sum | 1 | | |
| A13 | PSA 8.4.7 | Contractor's time related obligations in respect of the OH&S Act and Construction Regulations, 2014 | Month | 20 | | |
| A14 | PSA 8.4.8 | Submission of the Health and Safety File | Sum | 1 | | |
| A15 | PSDB 5.1.3 | Accommodation of Traffic, providing and maintaining access to properties | Sum | 1 | | |
| A16 | PSA 8.13 | Environmental Management Requirements | | | | |
| A16.1 | | (a) Contractor's time related obligations in respect of the Environmental Management Plan | Month | 20 | | |
| A17 | PSA D07.01 | Training | | | | |
| A17.1 | | (a) Technical skills to Civil Technicians/Students | PC Sum | 1 | 75,000.00 | R 75,000.00 |
| A17.2 | | (b) Generic and Management Skills | PC Sum | 1 | 25,000.00 | R 25,000.00 |
| A17.3 | | (c) Contractor's handling costs, profit and all other charges in respect of Subitems A17.1 and A17.2 | | | | |
| A17.3.1 | | (i) Technical skills to Civil Technicians/Students | % | 75,000.00 | | |
| A17.3.2 | | (ii) Generic and Management skills | % | 25,000.00 | | |
| TOTAL SECTION A CARRIED TO SUMMARY | | | | | | |

| ITEM | PAYMENT T REFERS | DESCRIPTION | UNIT | QUAN- TITY | RATE | AMOUNT |
|------|---------------------------------------|--|--------|---------------|------------|--------------|
| B1 | SANS 1200DB PSDB PS8.3.2 | SECTION B: SEWER RETICULATION TRENCHES FOR SEWER PIPES Excavate in all materials for trenches, backfill, compact and dispose of surplus material: .02 Pipes over 125 mm dia up to 400 mm dia for depths: | | | | |
| B1.1 | | a) Up to 1.0 m | m | 788 | | |
| B1.2 | | b) Over 1.0 m up to 2.0 m | m | 2868 | | |
| B1.3 | | c) Over 2.0 m up to 3.0 m | m | 2225 | | |
| B1.4 | | c) Over 3.0 m up to 4.0 m | m | 695 | | |
| B1.4 | | c) Over 4.0 m up to 5.0 m | m | 1245 | | |
| B2 | PSDB PS8.3.2 | Extra over item B1 above for: | | | | |
| B2.1 | | b) Hard rock excavation | m³ | 391 | | |
| B2.2 | | c) Hand excavation and backfill where ordered by the Engineer | m³ | 20 | | |
| B3 | PSDB 8.3.2 | Excavate and dispose of unsuitable material from trench bottom | m³ | 330 | | |
| B4 | PSDB 8.3.2 | Treatment of Trench bottom for main pipelines only as specified or ordered by Engineer in writing | | | | |
| B4.1 | | .01 Compaction of in-situ material | m² | 3124 | | |
| | | .03 Synthetic-fibre filter fabric | | | | |
| B4.2 | | (a) Geotextile MacTex N 20.2 (195g/sqm) | m² | 200 | | |
| B5.5 | 8.3.3.3 | .03 Compaction in road crossings | m³ | 2400 | | |
| | 8.3.3.4 | .04 Overhaul: | | | | |
| B5.6 | | a) Limited overhaul | m³ | 10 | | |
| B5.7 | | b) Long overhaul | m³-km | 6000 | | |
| B6 | 8.3.4 | Particular items: | | | | |
| B6.1 | | .01 Shore deep excavations | PC Sum | 1 | 650,000.00 | 650,000.00 |
| B6.2 | | .02 Temporary Works : Control water inflow from 500mm to 5.0m | PC Sum | 1 | 200,000.00 | R 200,000.00 |
| B7 | 8.3.6 | Finishing: | | | | |
| | | .01 Reinstatement road surfaces complete with all courses: | | | | |
| B7.1 | | a) Gravel surfacing | m³ | 180 | | |
| B8 | PSDB 8.3.8 | Removal of existing pipes: | | | | |
| | | .01 Excavate by machine to 300 mm above pipes of: | | | | |
| B8.1 | | a) 160mm dia | m³ | 2144 | | |
| B8.2 | | b) 250mm dia | m³ | 1112 | | |
| | | Carried forward | | | | |

RE-ADVERT: APPOINTMENT OF A 7 CE/GB OR HIGHER CIDB REGISTERED CONTRACTOR FOR THE
CONSTRUCTION OF TOILETS AND SEWER NETWORK REPAIR IN GORTIN PHASE 1.

BID NO.: 23/2023/24

| ITEM | PAYMENT T REFERS | DESCRIPTION | UNIT | QUAN- TITY | RATE | AMOUNT |
|-------|-------------------------|---|--------|---------------|------------|--------------|
| | | Brought forward | | | | |
| B8.3 | | .02 Excavate by hand to expose pipes of a) 160mm dia | m³ | 100 | | |
| B8.4 | | b) 250mm dia | m³ | 100 | | |
| B9 | PSDB 8.3.9 | Provision of temporary bridges for maintaining access to properties: | | | | |
| B9.1 | | .01 Temporary pedestrian bridges | No | 20 | | |
| B10 | PSDB 8.3.10 | Moving of temporary bridges to and their re-erection in new positions: | | | | |
| B10.1 | | .01 Temporary pedestrian bridges | No | 20 | | |
| B11 | PSDB 8.3.11 | Protection of services | PC Sum | 1 | 450,000.00 | R 450,000.00 |
| | 1200 LB | <u>BEDDING (PIPES)</u> | | | | |
| B12 | 8.2.1 | Provision of bedding from trench excavations: | | | | |
| B12.1 | | .01 Selected granular material | m³ | 976 | | |
| B12.2 | | .02 Selected fill material | m³ | 976 | | |
| B13 | 8.2.2 | Supply only of bedding by importation: | | | | |
| | | .01 From other necessary excavations: | | | | |
| B13.1 | | a) Selected granular material | m³ | 977 | | |
| B13.2 | | b) Selected fill material | m³ | 977 | | |
| B14 | 8.2.5 | Overhaul of material for bedding cradle and selected fill blanket: | | | | |
| B14.1 | | .01 Long overhaul | m³ | 60 | | |
| | 1200 LD | <u>SEWERS</u> | | | | |
| B15 | 8.2.1 | Supply, lay, join, bed on class B bedding, complete with couplings and test pipes: | | | | |
| | | .01 uPVC class 34 heavy-duty solid wall pipes: | | | | |
| B15.1 | | a) 110mm dia | m | 5000 | | |
| B15.2 | | b) 160mm dia | m | 4040 | | |
| B15.3 | | c) 250mm dia | m | 1375 | | |
| B16 | 8.2.2 PSLD 8.2.19 | Extra over items B15 for the supplying, laying and bedding of uPVC specials complete with couplings: | | | | |
| B16.1 | PSLD 8.2.10 | .01 ERF Connection as shown on Dwg No 7515-S107 a) Connection from ERF to sewer mainline with 110mm dia uPVC Class 34 pipe this includes all the bends, rodding eye, reducers from 110mm to the size of the main pipe | No | 750 | | |
| | | Carried forward | | | | |

RE-ADVERT: APPOINTMENT OF A 7 CE/GB OR HIGHER CIDB REGISTERED CONTRACTOR FOR THE CONSTRUCTION OF TOILETS AND SEWER NETWORK REPAIR IN GORTIN PHASE 1.

BID NO.: 23/2023/24

| ITEM | PAYMENT REFERS | DESCRIPTION | UNIT | QUANTITY | RATE | AMOUNT |
|---|----------------|--|-----------|------------|------------|--------------|
| | | Brought forward | | | | |
| B17 | 8.2.3 | Precast concrete manhole: | | | | |
| | | 01 With SABS 558 type 4 cover and frame for 1200mm diameter precast concrete rings: | | | | |
| B17.1 | | a) Depth 0,5 m up to 1,0 m | No | 5 | | |
| B17.2 | | b) Depth 1,0 m up to 1,5 m | No | 35 | | |
| B17.3 | | c) Depth 1,0 m up to 1,5 m | No | 30 | | |
| B17.4 | | d) Depth 1,5 m up to 2,0 m | No | 50 | | |
| B17.5 | | e) Depth 2,0 m up to 2,5 m | No | 40 | | |
| B17.6 | | f) Depth 2,5 m up to 3.0 m | No | 10 | | |
| B17.7 | | g) Depth 3,0 m up to 3,5 m | No | 5 | | |
| B17.8 | | h) Depth 3,5 m up to 4,0 m | No | 5 | | |
| B17.9 | | i) Depth 4,0 m up to 4,5 m | No | 5 | | |
| B17.10 | | j) Depth 4,5 m up to 5.5m | No | 10 | | |
| | | .02 Uninstall manhole rings, demolish benching and reinstate the manhole to correct invert levels and specifications | | | | |
| B17.4 | | a) Depth 0,5 m up to 1,0 m | No | - | | Rate Only |
| B17.5 | | c) Depth 1,0 m up to 1,5 m | No | - | | Rate Only |
| B17.6 | | d) Depth 1,5 m up to 2,0 m | No | - | | Rate Only |
| B17.7 | | e) Depth 2,0 m up to 2,5 m | No | - | | Rate Only |
| B17.8 | | f) Depth 2,5 m up to 3.0 m | No | - | | Rate Only |
| B17.9 | | g) Depth 3,0 m up to 3,5 m | No | - | | Rate Only |
| B17.10 | | h) Depth 3,5 m up to 4,0 m | No | - | | Rate Only |
| B17.11 | | i) Depth 4,0 m up to 4,5 m | No | - | | Rate Only |
| B17.12 | | j) Depth 4,5 m and above | No | - | | Rate Only |
| B17.13 | | j) Depth 4,5 m and above | No | - | | Rate Only |
| B19 | PSLD 8.2.11 | Connection to existing sewer | No | 50 | | |
| B20 | PSLD 8.2.13 | Breaking into existing sewer and building a new manhole | No | 240 | | |
| B21 | PSLD 8.2.18 | Dislodging blocked manholes and pipes | Prov. Sum | 1 | 450,000.00 | R 450,000.00 |
| B21.1 | | a) Mark up on item B21 | % | 450,000.00 | | |
| B6.3 | 8.4.4 | a) Mark up on item B6.1 and 6.2 | % | 850,000.00 | | |
| TOTAL SECTION B CARRIED TO SUMMARY | | | | | | |

| ITEM | PAYMEN REFERS | DESCRIPTION | UNIT | QUAN- TITY | RATE | AMOUNT |
|-----------------|------------------|--|----------------|---------------|------|--------|
| | | SECTION C: TOILET BLOCKS | | | | |
| C1 | SANS 1200 C | <u>SITE CLEARANCE</u> | | | | |
| C1.1 | PSC 8.2.1 | Clear and grub: .01 Areas | m ² | 4,000 | | |
| C2 | 1200 D 8.3.2 | <u>EARTHWORKS</u> Bulk excavation: .01 Excavate in all materials and use for backfill | m ³ | 800 | | |
| C2.1 | | .05 Extra over items .01 above for: .01 Intermediate excavation | m ³ | 80 | | |
| C3 | 1200 DN 8.3.3 | Preparation for fill: .01 Compaction of suitable in situ material to: 150mm depth | | | | |
| C3.1 | | .01 90% modified AASHTO density | m ² | 904 | | |
| C4 | 1200 G 8.2.1 | <u>SCHEDULED FORMWORK ITEMS</u> Rough: .01 Vertical formwork to: | | | | |
| C4.1 | | .01 Edges, risers, ends and reveals not exceeding 300mm | m ² | 988 | | |
| C5 | 8.3.1 | <u>SCHEDULED REINFORCEMENT ITEMS</u> Mild steel bars in the following: | | | | |
| C5.1 | | .01 Mild steel reinforcement to reinforced concrete work (R) | ton | 48 | | |
| C6 | 8.3.2 | High-tensile welded mesh in the following: | | | | |
| C6.1 | | .01 Type 193 fabric reinforcement in concrete surface beds, | m ² | 4,000 | | |
| C7 | 8.4.3 | <u>SCHEDULED CONCRETE ITEMS</u> Strength concrete: .02 Class 25 MPa/ 19 mm concrete in: | | | | |
| C7.1 | | .01 Raft Foundation, bases and stub | m ³ | 1,200 | | |
| C8 | 8.4.4 | Unformed surface finishes: .01 Wood-floated finishes to: | | | | |
| C8.1 | | .01 Top of surfacebed | m ² | 1,712 | | |
| Carried forward | | | | | | |

| Brought forward | | | | | | |
|---|---------|---|--------|--------|--|--|
| C9 | PD 10 | BUILDING WORK | | | | |
| C9 | PD.01 | Brickwork: | | | | |
| C9.1 | | .01 140 mm thick, outside face: face brick standard/extra/aesthetic, inside face: non-facing plastered/extra, engineering bricks | m² | 16,480 | | |
| C10 | PD.02.3 | Plaster work: | | | | |
| C10.1 | | .01 15 mm thick, wood-float finish | m² | 29,920 | | |
| C11 | PD.03.1 | Doors and windows: | | | | |
| C11.1 | | .02 Steel door with frame: .01 Clisco Steel Door And Frame With 2 Lever Lcksets 1981 x 762 mm | number | 2,000 | | |
| C12 | PD.05 | Structural timber: | | | | |
| C12.1 | | .05 Purlins 76 mm x 50 mm | m | 10,000 | | |
| C13 | PD 08.1 | Materials | | | | |
| C13.1 | | a) Water Closet (WC) Suite | No | 2,000 | | |
| C13.2 | | c) Concrete Wash Hand Basin | No | 2,000 | | |
| C14 | PD 06 | Roof Sheeting and Accessories | | | | |
| C14.1 | | Profiled Metal Sheeting And Accessories 0,6mm Corrugated profile Z275 spelter galvanised steel roof a) Roof coverings with pitches not exceeding 25 degrees | m² | 3,840 | | |
| TOTAL SECTION C CARRIED TO SUMMARY | | | | | | |

RE-ADVERT: APPOINTMENT OF A 7 CE/GB OR HIGHER CIDB REGISTERED CONTRACTOR FOR THE
CONSTRUCTION OF TOILETS AND SEWER NETWORK REPAIR IN GORTIN PHASE 1.

BID NO.: 23/2023/24

| ITEM | PAYMEN REFERS | DESCRIPTION | UNIT | QUAN- TITY | RATE | AMOUNT |
|---|------------------|--|----------|---------------|------------|--------------|
| D1 | SANS 1200 L | SECTION D: SEWER PUMPSTATION | | | | |
| | 8.3.2 | Sewer Pump Generator and Accessories | | | | |
| D1.1 | | .01 250kVA Volvo Penta Generator | Prov Sum | 3 | 650,000.00 | 1,950,000.00 |
| D1.2 | | .02 Auto Changeover Switch | Prov Sum | 3 | 11,200.00 | 33,600.00 |
| D1.3 | | .03 Installation Labour | Prov Sum | 3 | 28,000.00 | 84,000.00 |
| D2 | PS10 | Charge required by Contractor on subitem D1 above | % | 2,067,600.00 | | |
| TOTAL SECTION D CARRIED TO SUMMARY | | | | | | |

**RE-ADVERT: APPOINTMENT OF A 7 CE/GB OR HIGHER CIDB REGISTERED CONTRACTOR FOR THE
CONSTRUCTION OF TOILETS AND SEWER NETWORK REPAIR IN GORTIN PHASE 1.** **BID NO.: 23/2023/24**

SUMMARY OF THE BOQ

| SECTION | DESCRIPTION | AMOUNT |
|------------------|--------------------------------|---------------|
| SECTION A | : PRELIMINARIES AND GENERAL | ..... |
| SECTION B | : SEWER RETICULATION | ..... |
| SECTION C | : ABLUTION BLOCKS | ..... |
| SECTION D | : PUMP STATION REHABILITATION | ..... |
| SUB-TOTAL |  | ..... |
| | CONTRACT PRICE ADJUSTMENT @ 5% | ..... |
| SUB-TOTAL |  | ..... |
| | CONTINGENCIES @ 5% | ..... |
| SUB-TOTAL |  | ..... |
| | VALUE ADDED TAX @ 15% | ..... |
| TOTAL |  | ..... |



C3: SCOPE OF WORK

PART C3: SCOPE OF WORKS

Pages

C3.1 Description of the Works

C3.2 Engineering

C3.3 Procurement

C3.4 Construction (Civil)

C3.5 Management

Status

Should any requirement or provision in the parts of the Scope of Work conflict with any requirement of any Standardised Specification, or any drawings, the order of precedence, unless otherwise specified, is:

- Project Specifications
- Drawings
- Scope of Works
- The following variations and additions to the SANS 1200 Standardized Specifications referred to shall apply to this Contract.

PART C3

SCOPE OF WORK

Specifies and describes the supplies, services, or engineering and construction works which are to be provided and any other requirements and constraints relating to the manner in which the contract work is to be performed

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PROJECT SPECIFICATIONS

SCOPE

The Standard Specifications that form part of this Contract have been written to cover all phases of work description of the project, the facilities available and the requirements to be met and may therefore cover items of work not applicable to this particular Contract.

The Project Specifications form an integral part of the Contract Documents, supplement a part or parts of the SANS 1200 Standard Specifications, and take precedence in the event of discrepancies with the Standard Specifications, the Schedule of Quantities or the Drawings.

PART A: THE WORKS

PS 1 GENERAL DESCRIPTION

The project is aimed at resolving all problems in the area in question, in order to enable the overall sewer system to function adequately. This will be addressed through the following scope of work: construction of new sewer network on areas without sewer network in order to connect to the existing sewer network so that complete service will be available to all households in the area in question, clean/flush/unblock existing sewer line and manholes, replacing damaged manholes, refurbish/repair/replace backup generator components and building new 2000 toilet structures.

PS 2 DESCRIPTION OF SITE AND ACCESS

The project location is about 12.5km to the North West of Sasolburg. The project is located between Zamdela, Gortin Phase 1. The proposed development investigated falls under the jurisdiction of Metsimaholo Local Municipality which is within Fezile Dabi District Municipality.

The exact position, as well as the access thereto, is shown on the locality plan which is included in this document.

PS 3 NATURE OF GROUND AND SUBSOIL CONDITIONS

A geotechnical investigation of the Site has been carried out and the report is available from the engineers' office on request for observation purposes only.

PS 4 DETAILS OF CONTRACT

A more detailed description of the works as required is given below:

- (a) The work under comprises mainly the following:
 - (i) Site clearance
 - (ii) The extent of sewer works involved in this contract is covered by the relevant sections of the Bill of Quantities and as shown on the relevant engineering drawings.
 - (iii) The toilets to be constructed are in accordance with the standard drawings provided relevant sections of the Bill of Quantities

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- (iv) The extent of refurbishment of the sewer pump station involves replacing the generators, components of the pumpstation and construction of v-drains for stormwater control.

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

Approximate quantities of each type of work are given in the Schedule of Quantities.

PS 5 CONSTRUCTION PROGRAMME

PS 5.1 GENERAL

The Contractor shall submit a preliminary programme of the work to the Engineer not later than two weeks after he has been notified of the acceptance of his tender. The programme shall be in the form of a bar chart and shall show each structure and major operations, start and end dates and duration, as well as the expected dates on which the various mechanical/electrical contractors can commence with their work. The Contractor shall also indicate on the programme the critical path of each section of his work, as well as the critical path of the Contract as a whole.

If any water-retaining structure incorporates any mechanical/electrical equipment such as the valves, the Contractor shall allow in his programming for opportunities and where necessary, priority for the particular mechanical/electrical contractor to test his equipment. This may entail the filling with water of any structure in stages if required for testing of mechanical/electrical equipment. This filling with water shall be done by the Contractor and shall form part of the testing for watertightness as specified in the relevant section.

The Contractor shall bear in mind that certain mechanical and electrical equipment can only be installed once civil structures have been completed and he shall allow for this in the programme.

The Contractor shall amply provide in his programming for the duration of tests by others. The exact timing and duration of these tests shall be requested from and obtained in writing from the Engineer who will finalise arrangements with the various mechanical/electrical contractors.

In drawing up his programme the Contractor shall take into account all the requirements regarding construction periods and priorities of different sections of the works.

As soon as the Engineer has received a similar programme from each of the mechanical and electrical contractors, the Engineer will meet all the Contractors to coordinate and to finalise the following:

- (a) The dates on which each of the mechanical and electrical contractors will be given access to the Site and on which they can commence with the installation of their equipment in the various structures;
- (b) The dates on which the Engineer will have revised final drawings available in those cases where modifications to structures are necessary to accommodate the mechanical and electrical equipment.

The Contractor shall draw up and submit a final programme to the Engineer for approval not later than one week after the date of the abovementioned coordinating meeting. This final programme shall clearly show the anticipated quantities of work to be performed each month in respect of each structure and major operation.

Once he has approved the programme the Engineer will hand a copy thereof to each of the mechanical and electrical contractors. The approved programme will form the basis

for determining responsibility for delays and for any consequential damage resulting from such delays suffered by the Employer.

It must be clearly understood that claims for delays suffered by a contractor due to deviations from the approved programme by another contractor, will only be favourably considered where such delay is applicable to any activity on the critical path. No claims will be considered where a contractor, who is ahead of the programme, has to wait for another contractor who is progressing according to the programme.

The approval of the programme by the Engineer will not restrict the right of the Engineer to instruct the Contractor to modify the programme, should circumstances so require.

If, during the progress of the work, the quantities of work performed per month fall below that originally programmed, or if the programme is deviated from in any way, the Contractor shall at his own cost submit a revised programme within one week of falling behind programme or deviating from the original programme, indicating how he intends to regain lost time to ensure completion of the Works before the due completion date.

Such a revised programme shall ensure that the mechanical and electrical contractors shall retain access to the various structures on the dates originally agreed upon.

Any proposal in the revised programme to increase the tempo of work must be accompanied with positive steps to increase the production and utilise labour and plant in a more efficient manner.

Continued failure by the Contractor to work according to the programme, or revised programme, shall be sufficient reason for the Engineer to take steps as provided for in the General Conditions of Contract.

Should the Contractor wish to deviate from the approved programme at short notice and should such deviation require that steel fixing and bending details be made available earlier than stipulated in the approved programme, the Engineer will endeavour to accommodate the Contractor's altered requirements. The Contractor shall not have the right to any claims if the final details are not available in time.

The said programme and all revisions thereto shall also be provided to the Engineer in electronic digital format using the MS Project (Version XP/2003) software.

PS 6 SITE FACILITIES AVAILABLE

PS 6.1 WATER SOURCES

Potable water is available in the vicinity of the Site.

The responsible person for the Operation and Maintenance in the area of the site will be confirmed by Metsimaholo Local Municipality

Should the Contractor, in complying with his obligations in terms of subclause PS 7.2: Water, wish to utilise such water supply, he shall himself be responsible for making his own arrangements with the responsible water supply authority for the supply of all water that he may require from such supply for construction purposes as well as for domestic consumption.

If so required by the responsible water supply authority, the Contractor shall further be responsible, at his own cost, for making or otherwise providing metered connections to the available services at the positions specified by the water authority, as well as for the removal of such connections on completion of the Contract.

No warranty is offered or given by the Employer that the existing available reticulated water supply will necessarily be adequate for the Contractor's purposes nor that such supply is in any way guaranteed.

PS 6.2 ELECTRICITY SUPPLY

A reticulated electrical power supply is available in the vicinity of the Site.

The responsible electricity supply authority in the area of the Site is Eskom.

Should the Contractor, in complying with his obligations in terms of subclause PS 7.3: Electricity, wish to avail himself of such supply, he shall, in accordance with the provisions of subclause PS 7.3, and at his own cost, be responsible for making his own arrangements with the responsible electricity supply authority for the supply of all electrical power he may require from such reticulation network for construction purposes as well as for domestic consumption.

If so required by the responsible electricity supply authority, the Contractor shall, at his own cost, be responsible for making metered connections to the available services at the positions specified by the electricity supply authority, as well as for the removal of such connections on completion of the Contract.

No warranty is offered or given by the Employer that the existing available reticulated electrical power supply will necessarily be adequate for the Contractor's purposes nor that its supply is in any way guaranteed.

All charges as may be levied by the responsible electricity supply authority in respect of electrical power consumed by the Contractor shall be for the Contractor's account and payment to the Contractor in respect thereof shall, in accordance with the provisions of subclause PS 7.3, be deemed to be included in the sums tendered by the Contractor for the various Preliminary and General items listed in the Schedule of Quantities, as well as in the rates tendered by the Contractor for the various other items listed in the Schedule of Quantities which require the consumption of electricity.

The Contractor shall, when reasonably required by the Engineer, produce documentary proof that all amounts as may have become due and payable by the Contractor to the responsible electricity supply authority have been promptly paid in full.

PS 6.3 EXCREMENT DISPOSAL

No water-borne sewage or other off-site excrement disposal systems are available in the vicinity of the Site and the Contractor shall make use of chemical toilets on the Site.

PS 6.4 AREA FOR CONTRACTOR'S SITE ESTABLISHMENT

A specific area in close proximity to or on the Site of the Works will be made available by the Employer to the Contractor for the Contractor's site establishment. The specific area for the Contractor's site establishment will be identified to the Contractor by the Engineer and the Contractor shall have sole use of such area, free of charge, for the duration of the Contract. The Contractor shall use this area only for the purposes of erecting his site offices, workshops, stores and other facilities required for the execution of the Contract. The Contractor shall not use the area nor allow it to be used for any purposes not directly associated with the execution of the Contract.

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

Should the Contractor deem the area made available by the Employer to be inadequate or unsuitable for the Contractor's particular needs, then the Contractor shall be at liberty to make his own arrangements with the owners of other sites which he considers are better suited to his needs; provided always that the use by the Contractor of any area other than

that made available to him by the Employer shall be subject to the prior written approval of the Engineer, which approval shall not be unreasonably withheld; and provided further that the Contractor shall have no claim against the Employer in respect of any costs incurred by him, either directly or indirectly in consequence of utilising any area other than that made available to him by the Employer, and which costs exceed those costs allowed for by the Contractor in his Tender.

PS 7 SITE FACILITIES REQUIRED

PS 7.1 FACILITIES FOR THE ENGINEER

The Contractor shall provide on the Site, for the duration of the Contract and for the exclusive use of the Engineer and/or his Representative (as applicable), the various facilities described hereunder. All such facilities shall be provided promptly on the commencement of the Contract and failure on the part of the Contractor to provide any facility required in terms of this specification shall constitute grounds for the Engineer to withhold payment of the Contractor's tendered Preliminary and General items until the facility has been provided or restored as the case may be.

PS 7.1.1 Office accommodation

The Contractor shall provide on the Site one office for the exclusive use of the Engineer. Such office shall comply with and be furnished in accordance with the requirements of subclause 3.2 of SANS 1200 AB. The Contractor shall maintain the office in accordance with the requirements of subclause 5.2 of SANS 1200 AB.

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

PS 7.1.2 Carports

The Contractor shall provide on Site one carport for the exclusive use of the Engineer, in accordance with the requirements of subclause PSAB 3.3 of Portion 2 of the Project Specifications.

PS 7.1.3 Site meeting venue

The Contractor shall provide within his own site establishment facilities, a suitably furnished office or other venue capable of comfortably accommodating a minimum of **eight** (8) persons at site meetings. The Engineer shall be allowed free use of such venue for conducting any other meetings concerning the Contract at all reasonable times.

PS 7.1.4 Contract nameboards

The Contractor shall provide, erect and maintain two contract nameboards at such positions and locations as are directed by the Engineer, in accordance with the requirements set out in SANS 1200 AB (as amended).

The Contractor shall before ordering or manufacturing any such contract nameboards, obtain the Engineer's written approval in respect of all names and wording to appear on the contract nameboards.

PS 7.1.5 Survey equipment and assistants

(a) Survey equipment

The Contractor shall, in accordance with the requirements of SANS 1200 AB (as amended) provide the following survey equipment for the exclusive use of the Engineer and his staff:

-
- (i) 1 upright reading automatic level with tripod;
 - (ii) 1 metric levelling staff with protective cover bag;
 - (iii) 6 ranging rods;
 - (iv) 1 100 metre Stilon tape measure;
 - (v) 1 ± 2 kg hammer.

(b) Survey assistants

The Contractor shall, in accordance with the requirements of subclause 5.5 of SANS 1200 AB, make available to the Engineer, two (2) survey assistants.

PS 7.1.6 Telephone facilities

The Contractor shall, in accordance with the requirements of subclauses PSAB 4.1 and PSAB 5.4 of the Project Specifications, provide on Site for the duration of the Contract, the following communication facilities for the use of the Engineer and his Representative:

(a) Phones

- (i) Cellular phone: one
- (ii) Number of telephone hand-sets required: one

PS 7.1.7 Computer facilities

The Contractor shall provide the following computer facilities together with the specified software installed, for the exclusive use of the Engineer and his staff, in accordance with the requirements of SANS 1200 AB (as amended).

- (a) 1 computer
- (b) 1 printer.

PS 7.1.8 Fax facilities

The Contractor shall provide telefax facilities in accordance with the requirements of SANS 1200 AB (as amended).

PS 7.1.9 Electricity supply for the Engineer

All electricity supply to the Engineer's office(s), whether provided by the Contractor by way of a reticulated supply from a local authority or other authorised electricity supply, or by way of on-site generators, shall be regulated by the Contractor to within limits such as to prevent damage due to fluctuations in the electrical current supply that may occur to any electrical plant and equipment provided by the Contractor or the Engineer.

The Contractor shall be liable for and pay to the Engineer on demand, all costs that the Engineer may incur in the repair or replacement of any electrical equipment provided by the Engineer on the Site. Reliance by the Contractor on the regulation of the electrical supply by the supplier or on current regulators fitted to generators shall not absolve the Contractor of his liabilities in terms of this subclause and, where appropriate, the Contractor shall provide and install at his own cost, all such electrical current-regulating equipment as is necessary to prevent damage to the said equipment.

PS 7.1.10 Site instruction book

The Contractor shall keep a triplicate book for site instructions on the Site at all times.

PS 7.1.11 Housing for Engineer's Representative

The Engineer will provide housing for the Engineer's Representative. The housing and the relevant services and local authority rates and charges shall be paid by the Contractor

on the written instruction of the Engineer, from a Prime Cost Sum included in Section 1200 A of the Schedule of Quantities for this purpose.

The Contractor is entitled to a percentage of the value of each payment to the Engineer to cover his expenses in this regard. (See item PSA 8.6.)

PS 7.2 WATER

The Contractor shall, at his own expense, be responsible for obtaining and distributing all water as may be required for the purposes of executing the Contract, including water for both construction purposes and domestic use, as well as for making all arrangements in connection therewith. The Contractor shall further, at his own expense, be responsible for providing all necessities for procuring, storing, transporting and applying water required for the execution of the Contract, including but not limited to all piping, valves, tanks, pumps, meters and other plant and equipment, as well as for all work and superintendence associated therewith.

The sources of all water utilised for the purposes of the Contract shall be subject to the prior approval of the Engineer, which approval shall not be unreasonably withheld.

The Contractor shall comply with all prevailing legislation in respect of drawing water from natural and other sources and shall, when required by the Engineer, produce proof of such compliance. The distribution of water shall be carried out by the Contractor strictly in accordance with the applicable laws and regulations.

All water provided by the Contractor for construction purposes shall be clean, free from undesirable concentrations of deleterious salts and other materials and shall comply with any further relevant specifications of the Contract. The Contractor shall, whenever reasonably required by the Engineer, produce test results demonstrating such compliance. Water provided by the Contractor for human consumption shall be healthy and potable to the satisfaction of the health authorities in the area of the Site.

No separate payment will be made to the Contractor for the obtainment, distribution and consumption of water, the costs of which will be deemed to be included in the Contractor's tendered rates.

PS 7.3 ELECTRICITY

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

The distribution of electricity shall be carried out by the Contractor strictly in accordance with the applicable laws and regulations.

No separate payment will be made to the Contractor for the obtainment, distribution and consumption of electricity, the costs of which will be deemed to be in the Contractor's tendered rates and prices.

PS 7.4 EXCREMENT DISPOSAL

The Contractor shall, at his own expense, be responsible for safely and hygienically dealing with and disposing of all human excrement and similar matter generated on the Site during the course of the Contract, to the satisfaction of the responsible health authorities in the area of the Site and the Engineer. All such excrement shall be removed from the Site and shall not be disposed of by the Contractor on the Site.

The Contractor shall further comply with any other requirements in this regard as may be stated in the Contract.

No separate payment will be made to the Contractor in respect of discharging his obligations in terms of this subclause and the costs thereof shall be deemed to be included within the Contractor's tendered Preliminary and General items.

PS 8 FEATURES REQUIRING SPECIAL ATTENTION

PS 8.1 SITE MAINTENANCE

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

PS 8.2 TESTING AND QUALITY CONTROL

PS 8.2.1 Contractor to engage services of an independent laboratory

Notwithstanding the requirements of the Specifications pertaining to testing and quality control, the Contractor shall engage the services of an approved independent laboratory to undertake all testing of materials, the results of which are specified in, or may reasonably be inferred from, the Contract. These results will be taken into consideration by the Engineer in deciding whether the quality of materials utilised and workmanship achieved by the Contractor comply with the requirements of the Specifications. The foregoing shall apply irrespective of whether the specifications indicate that the said testing is to be carried out by the Engineer or by the Contractor.

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

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

PS 8.2.2 Additional testing required by the Engineer

In addition to the provisions of subclause PS 8.2.1: Contractor to engage services of an independent laboratory, the Engineer shall be entitled at times during the Contract to require that the Contractor arrange with the independent laboratory to carry out any such tests, additional to those described in subclause PS 8.2.1, at such times and at such locations in the Works as the Engineer shall prescribe. The Contractor shall promptly and without delay arrange with the independent laboratory for carrying out all such additional testing as required by the Engineer, and copies of the test results shall be promptly submitted to the Engineer.

PS 8.2.3 Costs of testing

(a) Tests in terms of subclause 8.2.1

The costs of all testing carried out by the independent laboratory in accordance with the requirements of subclause PS 8.2.1, above shall be borne by the Contractor and shall be deemed to be included in the tendered rates and prices for the respective items of work as listed in the Schedule of Quantities and which require testing in terms of the Specifications. No separate payments will be made by the Employer to the Contractor in respect of any testing carried out in terms of subclause PS 8.2.1.

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

(b) Additional tests required by the Engineer

The costs of any additional tests required by the Engineer in terms of subclause PS 8.2.2: Additional testing required by the Engineer, shall be reimbursed to the Contractor against substitution of the Provisional Sum allowed therefore in the Schedule of Quantities; provided always that the costs of any such additional tests ordered by the Engineer, the results of which indicate that the quality of the materials utilised and/or the standard of workmanship achieved are/is not in accordance with the specifications, shall not be reimbursable to the Contractor.

PS 8.3 FACILITIES TO OTHER CONTRACTORS

In addition to the requirements of Clause 18 of the General Conditions of Contract, the Contractor must make allowances for other Contractors (mechanical and electrical) on the Site. This may involve adapting his programme to accommodate the work of other Contractors and ensuring access to their sites along prescribed routes over the Site of this Contract.

PS 8.4 SUBCONTRACTORS

All matters pertaining to subcontractors (including Nominated Subcontractors) and the work executed by them shall be dealt with directly between the Engineer and the Contractor in the context of all subcontract work being an integral part of the Works for which the Contractor is responsible.

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

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

PS 8.5 ACCESS TO PROPERTIES

The Contractor shall organise the work to cause the least possible inconvenience to the public and to the property owners adjacent to or affected by the work, and except as hereunder provided, shall at all times provide and allow pedestrian and vehicular access to properties within or adjoining or affected by the area in which he is working. In this respect the Contractor's attention is drawn to Clause 17 of the Conditions of Contract.

PS 9 MONTHLY STATEMENTS AND PAYMENT CERTIFICATES

The statement to be submitted by the Contractor in terms of Clause 49 of the Conditions of Contract shall be prepared by the Contractor at his own cost, strictly in accordance with the standard payment certificate prescribed by the Engineer, in digital electronic computer format. The Contractor shall, together with a copy of the digital electronic computer file of the statement, submit two (2) A4 size paper copies of the statement.

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

The Contractor shall, at his own cost, make the said adjustments to the statement and return it to the Engineer within three (3) normal workings days from the date on which the

Engineer communicated to the Contractor the adjustments required. The Contractor shall submit to the Engineer five (5) sets of A4 size paper copies of such adjusted statement, together with a copy of the electronic digital computer file thereof.

Any delay by the Contractor in making the said adjustments and submitting to the Engineer the requisite copies of the adjusted statement for the purposes of the Engineer's payment certificate will be added to the times allowed to the Engineer in terms of Subclause 49.4 of the Conditions of Contract to submit the signed payment certificate to the Employer and the Contractor. Any such delay will also be added to the period in which the Employer is required to make payment to the Contractor.

PS 10 CONSTRUCTION IN RESTRICTED AREAS

Working space is sometimes restricted. The construction method used in these restricted areas largely depends on the Contractor's Plant. Notwithstanding, measurement and payment will be strictly according to the specified cross-sections and dimensions irrespective of the method used, and the rates and prices tendered will be deemed to include full compensation for any difficulties encountered by the Contractor while working in restricted areas. No extra payment nor any claim for payment due to these difficulties will be considered.

PS 11 DRAWINGS

PS 11.1 FIGURED DIMENSIONS TO BE USED

The Contractor shall use only the dimensions stated in figures on the Drawings in setting out the Works, and dimensions shall not be scaled from the Drawings, unless required by the Engineer. The Engineer will, on the request of the Contractor in accordance with the provisions of Subclause 13.3 of the Conditions of Contract, provide such dimensions as may have been omitted from the Drawings.

PS 11.2 AS-BUILT/RECORD DRAWINGS

All information in possession of the Contractor, required by the Engineer and/or the Engineer's Representative to complete the as-built/record drawings, must be submitted to the Engineer's Representative before a Certificate of Completion will be issued.

PS 12 SAMPLES

Materials or work which do not conform to the approved samples submitted in terms of Subclause 24.3 of the Conditions of Contract, will be rejected. The Engineer reserves the right to submit samples to tests to ensure that the material represented by the sample meets the specification requirements.

The costs of any such tests conducted by or on behalf of the Engineer, the results of which indicate that the samples provided by the Contractor do not conform to the requirements of the Contract, shall, in accordance with the provisions of Subclause 23.7 of the Conditions of Contract, be for the Contractor's account.

PS 13 NOTICES, SIGNS, BARRICADES AND ADVERTISEMENTS

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

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

PS 14 WORKMANSHIP AND QUALITY CONTROL

The onus to produce work that conforms in quality and accuracy of detail to the requirements of the Specifications and Drawings rests with the Contractor, and the Contractor shall, at his own expense, institute a quality control system and provide suitably qualified and experienced engineers, foremen, surveyors, materials technicians, other technicians and technical staff, together with all transport, instruments and equipment to ensure adequate supervision and positive control of the Works at all times.

The cost of supervision and process control, including testing carried out by the Contractor, will be deemed to be included in the rates tendered for the related items of work.

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

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

PS 15 EXTENSION OF TIME DUE TO ABNORMAL RAINFALL

PS 15.1 Extension of time in respect of delays resulting from wet climatic conditions on the Site will only be considered in respect of abnormally wet climatic conditions and shall be determined for each calendar month or part thereof, in accordance with the formula given below:

$$V = (Nw - Nn) + (Rw - Rn)/X$$

in which formula the symbols shall have the following meanings:

V = Potential extension of time in calendar days for the calendar month under consideration:

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

When the value of V for any month exceeds the number of days in the particular month, V will be the number of days in the month.

Nw = Actual number of days in the calendar month under consideration on which a rainfall of Y mm or more was recorded on the Site

Nn = Average number of days, derived from existing records of rainfall in the region of the Site, on which a rainfall of Y mm or more was recorded for the calendar month

Rw = Actual rainfall in mm recorded on the Site in an approved rain gauge for the calendar month under consideration

Rn = Average rainfall in mm for the calendar month, derived from existing records of rainfall in the region of the Site

The factor $(N_w - N_n)$ shall be deemed to be a fair allowance for variations from the average number of days during which the rainfall exceeds Y mm.

The factor $(R_w - R_n)/X$ shall be deemed to be a fair allowance for variations from the average number of days during which the rainfall did not exceed Y mm but wet conditions prevented or disrupted work.

PS 15.2 The rainfall records at rainfall station number 0125/150 Cofimvaba - TNK for the period 01-01-1993 to 31-12-2002 are reproduced in the accompanying table, and the monthly averages (R_n and N_n) for this period shall, for the purposes of this Contract be taken as normal and as the values to be substituted for R_n and N_n in the formula above. The values of X and Y shall be 20 and 10 respectively.

The potential extension of time V has been calculated for each month and year of the period concerned to indicate the possible effect of the rainfall formula. The values of V were obtained by applying the rainfall formula and using the actual rainfall figures and the calculated values of R_n and N_n indicated in the table.

PS 15.3 The Contractor shall, at his own cost, provide and erect on the Site at a location approved by the Engineer, an approved rain gauge, which shall be fenced off in a manner which will prevent any undue interference by workmen and others. The Contractor shall, at his own cost, arrange for the reading of the rain gauge on a daily basis for the duration of the Contract. The gauge readings, as well as the date and time at which the reading was taken shall be recorded in a separate record book provided by the Contractor for this purpose. All entries in the rainfall record books shall be signed by the person taking the reading and the gauge shall be properly emptied immediately after each reading has been taken. If required by the Engineer, the Engineer shall be entitled to witness the reading of the gauge.

PS 15.4 The Contractor's claims in terms of Subclause 42.2 of the Conditions of Contract for extension of time in respect of delays resulting from wet climatic conditions on the Site during each month, shall be submitted in writing to the Engineer monthly;

provided always that

- (a) the period allowed to the Contractor in terms of Clause 48 of the Conditions of Contract in which to submit his claim for each month shall be reduced to seven (7) days, calculated from the last day of the month to which the claim applies; and
- (b) the 28-day period allowed to the Engineer in terms of Subclause 42.2 of the Conditions of Contract in which to give his ruling on the claim, shall be reduced to fourteen (14) days.

The Contractor's monthly claim shall be accompanied by a copy of the signed daily rainfall readings for the applicable month.

PS 15.5 The extent of any extension of time which may be granted to the Contractor in respect of wet climatic conditions (whether normal or abnormal) shall be determined as the algebraic sum of the "V" values for each month between the Commencement Date and the Due Completion Date of the Contract, calculated in accordance with subclause PS 15.1 above;

provided always that

- (a) rainfall occurring within the period of the Contractor's Christmas shut-down period (referred to in Subclause 1.6 of the Conditions of Contract) shall not be taken into account in the calculation of the monthly "V" values;
- (b) rainfall occurring during any period during which the Contractor was delayed due to reasons other than wet climatic conditions on the Site, and for which delay an extension of time is granted by the Engineer, shall not be taken into account in the calculation of the monthly "V" values;

- (c) if the algebraic sum of the "V" values for each month is negative, the time for completion will not be reduced on account of subnormal rainfall, and
- (d) where rainfall is recorded only for part of a month, the "V" value shall be calculated for that part of the month using pro rata values for Nn and Rn.

PS 15.6 The Engineer shall, simultaneous with granting any extension of time in terms of this clause, revise the Due Completion Date of the Contract to reflect an extension of time having been granted in respect of wet climatic conditions, to the extent of the algebraic sum of all the "V" values for all the preceding months of the Contract, less the aggregate of the "Nn" values for the remaining (unexpired) months of the Contract (viz less aggregate of the potential maximum negative "V" values for the remaining Contract Period). Thus, provided that where such period is negative, the Due Completion Date shall not be revised.

PS 15.7 Any extension of time in respect of wet climatic conditions granted in terms of this clause shall not be deemed to take into account delays experienced by the Contractor in repairing or reinstating damage to or physical loss of the Works arising from the occurrence of abnormal climatic conditions. Extension of time in respect of any such repairs or reinstatement regarding damage shall be the subject of a separate application for extension of time in accordance with the provisions of Clause 42 and Clause 48 of the Conditions of Contract.

PS 16 TRENCHES

No trenches may be left open during the Contractor's holiday during December and January. All trenches which have been excavated but which have not been finally backfilled and compacted at the commencement of the said holiday period shall be temporarily fully backfilled and compacted to a standard which will

- (a) prevent damage occurring to the trenches or any other part of the Works;
- (b) prevent damage to or physical loss of the property of any person;
- (c) eliminate the risk of injury to any person;

during the said period.

All costs involved in the temporary backfilling and compaction of such trenches and the subsequent reopening of the trenches after the holiday period shall be for the Contractor's account.

PS 17 ALTERNATIVE TENDERS

In the case of an Alternative Tender submitted by the Contractor having been accepted by the Employer, the provisions as set out hereunder shall, in addition to the other requirements of the Contract, apply in the Contract.

PS 17.1 COMPLETION AND SUBMISSION OF FINAL DESIGNS AND DRAWINGS

The Contractor shall, not later than one (1) month prior to the date on which he intends to commence work on the Works or any portion thereof which is the subject of the Contractor's alternative technical proposals in respect of the design or specifications of the Works contained in an Alternative Tender accepted by the Employer, submit to the Engineer for his approval in accordance with the provisions of Subclause 13.7 of the Conditions of Contract, the complete set of final working drawings, including general layout drawings and bending schedules, final design calculations, specifications, the design assumptions and parameters on which the designs are based and all other documentation and details as may be required by the Engineer for the purposes of evaluating and approving the final design, specifications and drawings.

The information and details to be submitted by the Contractor in accordance with the above paragraph shall comply in all respects with the following:

(a) Calculations

- (i) Calculations shall include calculations of stresses in the structure and in the foundations as relevant, including calculations of the reinforcing or prestressed steel.
- (ii) The calculations shall be set out in a clear and logical manner to facilitate checking.
- (iii) A full description of the design assumptions shall accompany the calculations.

(b) Drawings

- (i) Drawings shall show the whole structure in elevation, sectional elevation and in plan to a suitable scale.
- (ii) Sufficient large-scale sections and other details shall be submitted to show the concrete and other dimensions clearly.
- (iii) Foundation levels and foundation sizes, as well as the steel reinforcement at critical sections, shall be indicated on the drawings.
- (iv) The centroids of the cable profiles in prestressed concrete sections shall be shown with sufficient details of the prestressing system that the Contractor proposes to use.
- (v) The standard of detailing and the quality of the prints shall be the same as that of the Contract Drawings supplied to the Contractor, or in the absence of any such Contract Drawings having been provided, of the same standard as that of the Tender Documents.
- (vi) The drawings shall be compiled in the official language of the Contract.

(c) Further details

Should the Engineer conclude that the calculations, drawings, specifications or any other data submitted by the Contractor in accordance with the provisions of this clause are insufficient or inadequate for proper evaluation, the Engineer reserves the right to require the Contractor to submit such further calculations, drawings, specifications and any other such data as the Engineer may require. If such further details are not submitted within the time required by the Engineer, the Tenderer will be deemed to be in default of the provisions of this clause.

The Contractor shall submit only drawings and other data which are complete in all respects and in accordance with this clause. If the final calculations, drawings and details do not comply with the specified requirements, the alternative designs will be rejected unless suitably amended by the Contractor.

The Contractor will not be entitled to any claim for delays experienced as a result of submitting incomplete drawings or other documents and data which are not strictly in accordance with the requirements of this specification.

The Contractor shall not commence executing the Works or any portion thereof which is the subject of alternative technical proposals in respect of the design or specifications of the Works contained in an Alternative Tender accepted by the Employer, until the Engineer's approval of the designs and calculations has been given in writing and the drawings signed by the Employer, or the Engineer on the Employer's behalf.

PS 17.2

STATUS OF ACCEPTED DRAWINGS

The accepted Drawings shall form an integral part of the Contract Documents, and the use of drawings not accepted and signed by or on behalf of the Employer will not be permitted for construction or manufacturing purposes.

Notwithstanding the approval and/or acceptance and signing of the Drawings, the Contractor shall, as provided in Subclause 4.2 of the Conditions of Contract, remain fully responsible for the details, discrepancies, omissions, errors, and consequences in respect of the said Drawings. The approval of a design by the Engineer shall not in any way relieve the Contractor of his responsibility to produce a design that complies with all the specified requirements.

PS 17.3 MEASUREMENT AND PAYMENT

PS 17.3.1 Design, construction and remedy of defects

(a) Amount

The Contractor shall be paid a fixed sum amount for the design, preparation of drawings, execution, remedy of defects in and completion of the Works or portions thereof which are the subject of the Contractor's alternative technical proposals in respect of the design or specifications of the Works contained in an Alternative Tender accepted by the Employer. The sum shall be the sum of the products of all the tendered rates and quantities listed by the Contractor in the Schedule of Quantities pertaining to the said Works or portions thereof, and which Schedule formed part of the Contractor's Alternative Tender, but shall exclude the amount of the Provisional Sum in respect of the Engineer's reviewing and checking the Contractor's designs, etc, included in the Alternative Tender Sum.

No other payments will be made to the Contractor in respect of his costs incurred in the design, preparation and submission of drawings and other documents pertaining to the accepted Alternative Tender, all such costs being deemed to be included in the said sum referred to above.

(b) Remeasurement

Notwithstanding anything to the contrary as may be contained in the Contract, the said Works or portions thereof (as applicable) which are the subject of the Contractor's alternative technical proposals in respect of the design or specifications of the Works shall not be subject to remeasurement, and the quantities listed by the Contractor in the Schedule of Quantities forming part of his Alternative Tender shall be fixed and not subject to any variation whatsoever during the Contract.

(c) Contract Price Adjustment Factor

The tendered sum payable to the Contractor in terms of subclause PS 17.3.1: Design, construction and remedy of defects, paragraph (a) above shall not be subject to application of the Contract Price Adjustment Factor unless

- (i) the Works or portions thereof (as applicable) as originally specified in the Tender Documents and for which the Contractor's alternative technical proposals are substituted, were themselves subject to Contract Price Adjustment in terms of the Tender Documents, or
- (ii) the Alternative Tender was qualified by the Contractor to the effect that Contract Price Adjustment is to apply.

(d) Interim payments

The amounts which shall become due and payable to the Contractor in the monthly payment certificates in terms of Clause 49 of the Conditions of Contract, in respect of the portions of the Works which are the subject of the Contractor's alternative technical proposals, shall be determined on the basis of

- (i) the quantities of work certified as having been completed in the period for which the payment applies, and

- (ii) the rates listed by the Contractor in the said Schedule of Quantities pertaining to the alternative proposals;

provided always that no payment will be made in respect of quantities exceeding those listed by the Contractor in the said Schedule.

PS 17.3.2 Engineer's costs in reviewing the Contractor's design

The Engineer's costs incurred in reviewing, checking and approving the designs, drawings, calculations and other documents pertaining to the Contractor's accepted Alternative Tender (and which designs, drawings, calculations and other documents were submitted by the Contractor in accordance with the provisions of both the Tender Documents and the Contract) shall, on presentation of an account to the Contractor and certified in writing by the Employer, be paid by the Contractor to the Engineer.

The Contractor shall be reimbursed for the actual amounts of all such payments made in the subsequent payment certificate, in substitution of the Provisional Sum provided by the Contractor in the Schedule of Quantities forming part of his Alternative Tender in accordance with the requirements of the Tender Documents

PS 17.4 VARIATIONS TO THE ACCEPTED ALTERNATIVE PROPOSALS

PS 17.4.1 Variations by the Engineer

- (a) When the Engineer requires design modifications for reasons other than
 - (i) the Contractor's failure to comply with the design requirements, or
 - (ii) errors in the Contractor's designs (eg foundation conditions that differ materially from those indicated by the test holes),the Contractor shall make such modifications.
- (b) When such design modifications result in a variation in the quantities of work to be executed, such variations will be valued by the Engineer in accordance with the rates and prices in the Schedule of Quantities, and the tendered sum for the alternative will be adjusted up or down, depending on whether the modifications entail an increase or a decrease in the quantity of work.

PS 17.4.2 Variations by the Contractor

The Contractor shall not, subsequent to the approval of his alternative designs, specifications and drawings, deviate therefrom or make any alteration or variation thereto without the prior written permission of the Engineer. In such circumstances, the Engineer's approval shall be subject to the provisions of subclauses PS 17.1: Completion and submission of final designs and drawings, and PS 17.2: Status of accepted drawings.

PS 17.5 DEFAULT OF THE CONTRACTOR

Should it become apparent at any time during construction or during the Defects Liability Period that the Contractor's alternative design and/or specifications do not comply with the specified requirements, the Contractor shall be liable for all consequential damage and shall, at his own expense, do all the work required to ensure that the structure complies with the design requirements. In addition, the Contractor shall not be entitled to any additional payment in excess of the sum referred to in subclause PS 17.3.1: Design, construction and remedy of defects, paragraph (a) above.

When circumstances within the control of the Contractor arise after the acceptance of the Alternative Tender and when these circumstances, in the opinion of the Engineer, render

construction of the alternative unacceptable, the Contractor shall construct the Works strictly in accordance with the original design as specified in the Tender Documents. In such circumstances, the Contractor shall not be entitled to any additional payment and the sum referred to in subclause PS 17.3.1 shall be in full and final settlement to the Contractor in respect of constructing the Works and remedying any defects in the Works as originally specified in the Tender Documents.

PS 18

EXTENDED PUBLIC WORKS PROGRAMME SPECIFICATIONS

18.1

LABOUR-INTENSIVE COMPETENCIES OF SUPERVISORY AND MANAGEMENT STAFF

Established contractors shall only engage supervisory and management staff in labour intensive works who have either completed, or for the period 1 April 2004 to 30 June 2005, are registered for training towards, the skills programme outlined in Table 1.

Emerging contractors shall have personally completed, or for the period 1 April 2004 to 30 June 2005 be registered on a skills programme for the NQF level 2 unit standard. All other site supervisory staff in the employ of emerging contractors must have completed, or for the period 1 April 2004 to 30 June 2005 be registered on a skills programme for, the NQF level 2 unit standards or NQF level 4 unit standards.

| Personnel | NQF level | Unit standard titles | Skills programme description |
|---|-----------|--|--|
| Team leader / supervisor | 2 | Apply Labour Intensive Construction Systems and Techniques to Work Activities | This unit standard must be completed, and |
| | | Use Labour Intensive Construction Methods to Construct and Maintain Roads and Storm water Drainage | Any one of these 3 unit standards |
| | | Use Labour Intensive Construction Methods to Construct and Maintain Water and Sanitation Services | |
| | | Use Labour Intensive Construction Methods to Construct, Repair and Maintain Structures | |
| Foreman/ supervisor | 4 | Implement labour Intensive Construction Systems and Techniques | This unit standard must be completed, and |
| | | Use Labour Intensive Construction Methods to Construct and Maintain Roads and Storm water Drainage | Any one of these 3 unit standards |
| | | Use Labour Intensive Construction Methods to Construct and Maintain Water and Sanitation Services | |
| | | Use Labour Intensive Construction Methods to Construct, Repair and Maintain Structures | |
| Site Agent / Manager (i.e. the contractor's most senior representative that is resident on the site) | 5 | Manage Labour Intensive Construction Processes | Skills Programme against this single unit standard |
| Details of these skills programmes may be obtained from the CETA ETQA manager (e-mail: gerard@ceta.co.za , tel: 011-265 5900) | | | |

18.2 EMPLOYMENT OF UNSKILLED AND SEMI-SKILLED WORKERS IN LABOUR-INTENSIVE WORKS

1. Requirements for the sourcing and engagement of labour
 - 1.1.1 Unskilled and semi-skilled labour required for the execution of all labour intensive works shall be engaged strictly in accordance with prevailing legislation and SANS 1914-5, Participation of Targeted Labour.
 - 1.1.2 The rate of pay set for the SPWP is R 85,50 per task or per day.
 - 1.1.3 Tasks established by the contractor must be such that:
 - a) the average worker completes 5 tasks per week in 40 hours or less; and
 - b) the weakest worker completes 5 tasks per week in 55 hours or less.
 - 1.1.4 The contractor must revise the time taken to complete a task whenever it is established that the time taken to complete a weekly task is not within the requirements of 1.1.3.
 - 1.1.5 The Contractor shall, through all available community structures, inform the local community of the labour intensive works and the employment opportunities presented thereby. Preference must be given to people with previous practical experience in construction and / or who come from households:
 - a) where the head of the household has less than a primary school education;
 - b) that has less than one full time person earning an income;
 - c) where subsistence agriculture is the source of income.
 - d) those who are not in receipt of any social security pension income
 - 1.1.6 The Contractor shall endeavour to ensure that the expenditure on the employment of temporary workers is in the following proportions:
 - a) 60 % women;
 - b) 20% youth who are between the ages of 18 and 25; and
 - c) 2% on persons with disabilities.

PS 19 DESCRIPTION OF COMMUNITY

The Site of the works is surrounded by a number of middle to high income residential developments. A large percentage of the population is employed. Some of the local inhabitants have previous construction experience. It is the intention that this Contract should make maximum use of the local labour force which is currently unemployed.

PS 19.2 LABOUR INTENSIVE ASPECTS OF THE WORKS

Labour intensive means that, all work associated therewith shall be carried out by hand:

- Pipe trench excavations with depth not greater than 1.2 m and where the material is pickable
- Backfilling
- Preparation of bedding
- Laying pipes
- Valve and meter installation
- Construction of manhole structures
- Building works
- Formwork
- Concrete works
- Steel fixing
- Cleaning and finishing of sites
- Traffic accommodation

PS20 APPOINTMENT OF CONTRACTORS

PS20.1 PROCEDURE FOR INVITATION OF TENDERS

Tenders will be invited publicly through the general media and other forms of communication to ensure that the target communities are reached. The intention is to ensure that the SMME's in rural areas that may not be in a position to access the general press is also reached.

PS20.2 THE TENDER INVITATION SHALL INCLUDE:

- (a) Specifications and description of project or service to be procured.
- (b) Tendering information and documentation will be in English;
- (c) A non-refundable charge shall be payable to cover the cost of the tender documents and specifications;
- (d) In the event where normal tendering is not practical due to other constraints, at least three (3) selected service providers shall be invited to submit quotations.

PS20.3 COMPULSORY REQUIREMENTS

The following requirements shall be applicable to all tenders and non-adherence thereto shall result in an automatic disqualification of the tender submitted:

- (a) Attendance of site inspection for briefing;
- (b) Submission of valid original tax clearance certificate.
- (c) Authority to act and contractually bind the tenderer.

PS20.4 CLOSURE AND OPENING OF TENDERS

Tenders shall close on a date and time specified in tender document and shall be opened and read in public.

PS20.5 EVALUATION OF TENDERS

Tenders to be evaluated in the same manner as prescribed in the tender data.

PS20.6 CESSIONS

A service provider awarded a contract may not cede or subcontract a contract/project or any part thereof without written consent of the Employer and where such consent is granted, a signed agreement involving the cedent, cessionary and the Employer shall be entered into.

In any event, not more than 25% of the value of the contract shall be subcontracted. Both the cedent and the cessionary shall be jointly and severally liable for the quality of the material supplied and workmanship.

PS20.7 PERFORMANCE GUARANTEES

The Employer shall strive to facilitate the participation of HDI's and SMME by waiving or reducing the maximum amounts of sureties as follows:

- (a) No surety for projects between 0 to 500 000
- (b) 1% surety for projects between 500 000 to R1 million
- (c) 2,5% surety for projects between R1 million to R2 million
- (d) 10% surety for projects above R2 million

The period required to provide surety shall be 21 calendar days. However, depending on circumstances, a shorter period may be prescribed. In the event of failure to submit the surety within the stipulated period, the Employer shall be entitled to cancel the contract and award the tender to a suitable contractor.

Sureties may only be accepted from a banking institution registered in terms of the Bank Act, 1996, an insurer registered in terms of the Insurance Act, 1943 or from governmental institutions established for such purposes.

PS20.8 NOTIFICATION OF ACCEPTANCE

Successful service tenderer/s shall be notified before the tender validity period expires.

PS20.9 CONTRACTUAL AGREEMENT

The relationship between the Employer and contractor shall be managed under the following contractual documents:

- (a) The tender document submitted by the tenderer
- (b) The project drawings relevant for the tendered project
- (c) The General Conditions of Contract for Construction Works (GCC 2004) and the Standards Specifications for Road Bridge Works for State Authorities as they may apply from time to time.
- (d) Employers Procurement Policy
- (e) Any other relevant legislation aimed at meeting other government policy initiatives.

PS20.10 TAX CLEARANCE CERTIFICATE

No contract shall be awarded to an entity, which fails to submit a valid original Tax Clearance Certificate from the South African Revenue Service (SARS) certifying that the taxes of the said entity are in order or that suitable arrangements have been made with SARS, and submitted proof as part of the tender documentation.

In case where the successful tenderer has only submitted a letter from SARS, the tenderer will be given seven (7) working days to submit the original Tax Clearance Certificate. Failure to produce same will disqualify the tenderer and the next recommended tenderer shall be awarded the contract.

PS20.11 VARIATIONS

- (a) The Employer shall have the right to reduce or increase the scope of work by no more than 20% of the tendered amount without affecting the preliminary and general items.

PS 21 APPLICABLE STANDARDIZED SPECIFICATIONS

For the purposes of this Contract, the latest editions, including all amendments, of the following SANS 1200 Standardized Specifications shall apply:

| | | |
|--------------|---|-----------------------------------|
| SANS 1200 A | : | General (1986) |
| SANS 1200 AB | : | Engineer's office (1986) |
| SANS 1200 C | : | Site clearance (1980) |
| SANS 1200 D | : | Earthworks (1988) |
| SANS 1200 DB | : | Earthworks (pipe trenches) (1989) |
| SANS 1200 G | : | Concrete (structural) (1982) |

SANS 1200 H : Structural steelwork (1990)
SANS 1200 L : Medium-pressure pipelines (1983)
SANS 1200 LB : Bedding (pipes) (1983)
Variations and additions to the following SANS 1200 Standardized Specifications are given in Portion 2 of the Project Specifications:

SANS 1200 A : General
SANS 1200 AB : Engineer's office
SANS 1200 C : Site clearance
SANS 1200 D : Earthworks
SANS 1200 DB : Earthworks (pipe trenches)
SANS 1200 G : Concrete (structural)
SANS 1200 H : Structural steelwork
SANS 1200 L : Medium-pressure pipelines
SANS 1200 LB : Bedding (pipes)

The following Particular Specifications for work not covered by the SANS 1200 Standardized Specifications are also bound in Portion 2 of the Project Specifications:

PD : Building work
PF : Electrical Motors (Small Works)
PI : Dry-well pumping equipment
PL : Manually operated chain hoist
PN : Measuring Instruments



METSIMAHOLO LOCAL MUNICIPALITY

**RE-ADVERT: APPOINTMENT OF A 7 CE/GB OR HIGHER CIDB
REGISTERED CONTRACTOR FOR THE CONSTRUCTION OF
TOILETS AND SEWER NETWORK REPAIR IN GORTIN PHASE 1.**

BID NO.: 23/2023/24

**PART B: VARIATIONS AND ADDITIONS TO THE STANDARDIZED
SPECIFICATIONS FOR THIS CONTRACT, AND PARTICULAR SPECIFICATIONS**

PART B: VARIATIONS AND ADDITIONS TO THE STANDARDIZED SPECIFICATIONS FOR THIS CONTRACT, AND PARTICULAR SPECIFICATIONS

The following variations and additions to the SANS 1200 Standardized Specifications referred to in the last clause of Part A apply to this Contract. The prefix PS indicates an amendment to SANS 1200. The letters and numbers following these prefixes respectively indicate the relevant Standardized Specification and clause numbers in SANS 1200 to which the variation or addition thereunder applies.

PSA GENERAL

PSA 1 SCOPE

REPLACE THE CONTENTS OF SUBCLAUSE 1.1, INCLUDING THE NOTES, WITH THE FOLLOWING:

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

PSA 2 INTERPRETATIONS

PSA 2.3 DEFINITIONS

IN THE OPENING PHRASE BETWEEN THE WORDS "specification" AND "the following", INSERT THE WORDS "the definitions given in the Conditions of Contract and".

(a) General

ADD THE FOLLOWING DEFINITIONS:

" 'General Conditions' and 'Conditions of Contract': The General Conditions of Contract specified for use with this Contract, together with the Special Conditions of Contract as applicable.

'Specified': As specified in the Standardized Specifications, the Drawings or the Project Specifications. 'Specifications' shall have the corresponding meaning."

(b) Measurement and payment

REPLACE THE DEFINITIONS FOR "Fixed charge", "Time-related charge" AND "Value-related charge" WITH THE FOLLOWING:

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

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

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

PSA 2.4 ABBREVIATIONS

(a) Abbreviations relating to standard documents

ADD THE FOLLOWING ABBREVIATION:

"MAMDD: Modified AASHTO maximum dry density".

PSA 2.8.1 Principal

In the fourth line of Sub-clause 2.8.1, after the word "specification", *ADD*: "or in the measurement and payment clause of the standard specification, particular specification or project specification".

ADD THE FOLLOWING TO THIS CLAUSE:

Items which are designated as provisional quantities or provisional sums in the Schedule of Quantities are intended to provide for works, the need or extent of which shall be established by the Engineer during construction. Work scheduled as such shall only be undertaken on the written instruction of the Engineer and, where applicable, shall be paid for at the tendered rate or in the absence of rates shall be valued in accordance with Clause 6.6 of the General Conditions of Contract.

The Schedule of Quantities shall not be used for ordering purposes and no liability or responsibility shall be admitted by the Engineer in respect of materials ordered or procured by the Contractor based on the Schedule of Quantities.

PSA 3 MATERIALS

PSA 3.1 QUALITY

ADD THE FOLLOWING AT THE END OF SUBCLAUSE 3.1:

"All manufactured materials supplied shall be new materials unless the contrary is specified. All materials specified to be in accordance with SANS Specifications shall bear the SANS mark, where such a mark is available for the type of product."

PSA 4 PLANT

PSA 4.1 SILENCING OF PLANT

REPLACE THE CONTENTS OF SUBCLAUSE 4.1 WITH THE FOLLOWING:

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

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

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

PSA 4.2

CONTRACTOR'S OFFICES, STORES AND SERVICES

ADD THE FOLLOWING PARAGRAPH BEFORE THE EXISTING FIRST PARAGRAPH IN SUBCLAUSE 4.2:

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

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

DELETE "and first-aid services" IN THE SECOND PARAGRAPH OF SUBCLAUSE 4.2 AND ADD THE FOLLOWING:

"The Contractor shall provide on the Site and in close proximity to the actual locations where the work is being executed, one toilet per 10 workmen, which toilets shall be effectively screened from public view and their use enforced. Such toilets shall be relocated from time to time as the location of the work being executed changes, so as to ensure that easy access to the toilets is maintained.

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

ADD THE FOLLOWING SUBCLAUSE:

"PSA 4.3

MOTOR VEHICLE FOR SUPERVISORY STAFF

A motor vehicle of the make and type specified hereunder and the quantity stated in the Schedule of Quantities shall be supplied, serviced and maintained in good running order by the Contractor for the full period of the Contract. The specified vehicle shall, during the Contract period, at all times be made available to the Engineer's supervisory staff and, during breakdowns and servicing periods, an equivalent alternative vehicle shall be provided at no extra cost.

The Contractor shall supply fuel for the vehicle and maintain a convenient fuelling point within the main camp to which the Engineer's supervisory staff shall be given reasonable access for the purpose of refuelling the vehicle supplied to the Engineer by the Contractor under the Contract.

The vehicle may be driven by the Engineer's supervisory staff or any of the Engineer's drivers or other personnel authorised to so do and the Contractor shall provide sufficient insurance cover to allow for the vehicle to be driven by more than one person.

The vehicle shall be approved by the Engineer prior to supply. It should be of a light colour, fitted with steel belt radial tyres, alarm and immobiliser. The vehicle shall be air-conditioned and fitted with radio/cassette. The vehicle shall be covered by full comprehensive insurance and registered for immediate use. The vehicle is to be purchased new at the commencement of the Project unless otherwise approved by the Engineer.

The vehicle to be provided is a two-door, four-wheel drive, single cab with air-conditioning, a secure canopy and a minimum 3,0 litre petrol or diesel engine.

Note:

The vehicle will remain the property of the Contractor on completion of the Works.

The vehicle shall be made available within seven (7) days of the date of the Engineer's order to commence. Should this not be possible for reasons beyond the Contractor's control, the Contractor shall provide a temporary vehicle in good condition for the exclusive use of the Engineer on site pending the delivery of the scheduled vehicle."

PSA 5 CONSTRUCTION

PSA 5.1 SURVEY

PSA 5.1.1 Setting Out Of the Works

ADD THE FOLLOWING TO THIS CLAUSE:

The Contractor shall be fully responsible for the setting out of the works, and where labour intensive work is specified, for the setting out of the daily construction tasks.

The Contractor, within two (2) weeks after the site has been handed over to him, is to ascertain the correctness of all pegs and benchmarks. Any discrepancy shall immediately be reported in writing to the Engineer. Any costs or subsequent costs arising from discrepancies which had not been reported to the Engineer, within the aforementioned period, shall be the sole responsibility of the Contractor.

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

DELETE THE WORDS "in the vicinity of boundaries" IN THE SECOND SENTENCE OF SUBCLAUSE 5.1.2 AND REPLACE THE WORDS "under the direction of" IN THE SAME SENTENCE WITH "in consultation and liaison with".

ADD THE FOLLOWING AFTER THE SECOND SENTENCE OF SUBCLAUSE 5.1.2:

"The Contractor and the Engineer shall record on the said list, their concurrence or disagreement (as the case may be) regarding the completeness and accuracy of the details recorded therein."

REPLACE THE THIRD SENTENCE OF SUBCLAUSE 5.1.2 WITH THE FOLLOWING:

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

The costs of all checking, replacement and certification as aforesaid shall be entirely for the Contractor's account. This, with the provision always that the Contractor shall not be held liable for the cost of replacement of pegs which:

- a) cannot reasonably be re-established in their original positions by reason of the finished dimensions of the permanent works, and
- b) the Contractor can prove beyond reasonable doubt to the satisfaction of the Engineer, were disturbed, damaged or destroyed by others beyond his control."

PSA 5.3 PROTECTION OF EXISTING STRUCTURES

REPLACE "Machinery and Occupational Safety Act, 1983 (Act No 6 of 1983)" WITH "Occupational Health and Safety Act, 1993 (Act No 85 of 1993), as amended," AND INSERT THE FOLLOWING AFTER "(Act No. 27 of 1956)": "as amended".

PSA 5.4 PROTECTION OF OVERHEAD AND UNDERGROUND SERVICES

REPLACE THE HEADING AND THE CONTENTS OF SUBCLAUSE 5.4 WITH THE FOLLOWING:

"PSA 5.4 LOCATION AND PROTECTION OF EXISTING SERVICES

PSA 5.4.1 Location of existing services

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

Without in any way limiting his liability in terms of the Conditions of Contract in relation to damage to property and interference with services, the Contractor shall, in collaboration with the Engineer, obtain the most up-to-date plans as are available, showing the positions of services existing in the area where he intends to work. Neither the Employer nor the Engineer offers any warranty as to the accuracy or completeness of such plans and because services can often not be reliably located from plans, the Contractor shall ascertain the actual location of services depicted on such plans by means of careful inspection of the Site.

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

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

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

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

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

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

The Contractor shall also be liable for consequential damage in regard to (a) and (b), whether caused directly by the Contractor's operations or by the lack of proper protection.

No separate payment will be made to the Contractor in respect of his costs of providing, holding available on the Site and utilising the said detecting and testing equipment, nor for any costs incurred in preparing and submitting to the Engineer the Drawings as aforesaid. These costs shall be deemed included in the Contractor's other tendered rates and prices included in the Contract.

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

PSA 5.4.2 Protection during construction

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

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

Unless otherwise instructed by the Engineer, no services shall be left exposed after its exact position has been determined and all excavations carried out for the purpose of exposing underground services shall be promptly backfilled and compacted. In roadways, the requirements of subclause 5.9 of SANS 1200 DB should be observed. In other areas compaction is to be to 90% modified AASHTO density.

PSA 5.4.3 Alterations and repairs to existing services

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

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

A list of important telephone numbers for use when services such as electricity, water pipes, sewerage pipes and Telkom lines are damaged or need to be altered must be provided at a prominent place close to telephones in the Contractor's offices."

PSA 5.7 SAFETY

REPLACE THE CONTENTS OF SUBCLAUSE 5.7 WITH THE FOLLOWING:

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

-
- (a) Provide to its Employees on the site of the works, all safety materials, clothing and equipment necessary to ensure full compliance with the provisions of the Occupational Health and Safety Act, 1993 (Act No 85 of 1993) as amended (hereinafter referred to as the Act) at all times, and shall institute appropriate and effective measures to ensure the proper usage of such safety materials, clothing and equipment at all times;
 - (b) Provide, install and maintain all barricades, safety signage and other measures to ensure the safety of workmen and all persons in, on and around the site, as well as the general public;
 - (c) Implement on the site of the works, such procedures and systems and keep all records as may be required to ensure compliance with the requirements of the Act at all times;
 - (d) Implement all necessary measures so as to ensure compliance with the Act by all subcontractors engaged by the Contractor and their employees engaged on the works;
 - (e) Full compliance with all other requirements pertaining to safety as may be specified in the Contract.

The Employer and the Engineer shall be entitled, although not obliged, to make such inspections on the site as they shall deem appropriate, for the purpose of verifying the Contractor's compliance with the requirements of the Act. For this purpose, the Contractor shall grant full access to the site of all parts of the site and shall co-operate fully in such inspections and shall make available for inspection all such documents and records as the Employer's and/or Engineer's representative may reasonably require.

Where any such investigations reveal, or where it comes to the Engineer's attention that the Contractor is in any way in breach of the requirements of the Act or is failing to comply with the provisions of this clause, the Engineer shall, in accordance with the provisions of Clause 42 of the Conditions of Contract, be entitled to suspend progress on the works or any part thereof until such time as the Contractor has demonstrated to the satisfaction of the Engineer, that such breach has been rectified.

The Contractor shall have no grounds for a claim against the Employer for extension of time and/or additional costs if the progress on the works or any part thereof is suspended by the Engineer in terms of this clause, and the Contractor shall remain fully liable in respect of the payment of penalties for late completion in accordance with the provisions of Clause 46(1) of the Conditions of Contract should the Contractor fail to complete the Works on or before the specified due completion date in consequence of the suspension.

Persistent and repeated breach by the Contractor of the requirements of the Act and/or this clause shall constitute grounds for the Engineer to act in terms of Subclause 58(1)(b)(vi) of the Conditions of Contract and for the Employer to cancel the Contract in accordance with the further provisions of the said Clause 58."

ADD THE FOLLOWING SUBCLAUSE TO CLAUSE 5:

"PSA 5.9

SITE MEETINGS

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

PSA 6

TOLERANCES

ADD THE FOLLOWING SUBCLAUSE TO CLAUSE 6:

"PSA 6.4

USE OF TOLERANCES

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

Except where the contrary is specified, or when clearly not applicable, all quantities for measurement and payment shall be determined from the 'authorised' dimensions. These are specified dimensions or those shown on the Drawings or, if changed, as finally prescribed by the Engineer, without any allowance for the specified tolerances. Except if otherwise specified, all measurements for determining quantities for payment will be based on the 'authorised' dimensions.

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

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

PSA 7

TESTING

PSA 7.1

PRINCIPLES

PSA 7.2

APPROVED LABORATORIES

REPLACE THE CONTENTS OF SUBCLAUSE 7.2 WITH THE FOLLOWING:

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

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

PSA 8

MEASUREMENT AND PAYMENT

| | |
|--------------------|--|
| PSA 8.1 | MEASUREMENT |
| PSA 8.1.1 | Method of measurement, all sections of the Schedule |
| | <i>DELETE THE WORDS "and South West Africa".</i> |
| PSA 8.1.2 | Preliminary and General item or section |
| PSA 8.1.2.1 | Contents |
| | <i>REPLACE THE LAST SENTENCE OF SUBCLAUSE 8.1.2.1(b) WITH THE FOLLOWING:</i> |
| | "Separate items will be scheduled to cover the fixed, value-related and time-related components of the Contractor's preliminary and general costs." |
| PSA 8.1.2.2 | Tendered sums |
| | <i>REPLACE THE CONTENTS OF THIS SUBCLAUSE WITH THE FOLLOWING:</i> |
| | "Except only where specific provision is made in the Specifications and/or the Schedule of Quantities for separate compensation for any of these items, the Contractor's tendered sums under items PSA 8.3 and PSA 8.4 shall collectively cover all charges for: |
| | <ul style="list-style-type: none"> • risks, costs and obligations in terms of the Conditions of Contract and of this standardized specification; • head-office and site overheads and supervision; • profit and financing costs; • expenses of a general nature not specifically related to any item or items of the permanent or temporary work; • providing such facilities on site as may be required by the Contractor for the proper performance of the Contract and for its personnel, including, but without limitation, providing offices, storage facilities, workshops, ablutions, services such as water, electricity, sewage and rubbish disposal, access roads and all other facilities required, as well as for the maintenance and removal on completion of the works of these facilities and cleaning-up of the site of the Contractor's establishment and reinstatement to not less than its original condition, and • providing the facilities for the Engineer and his staff as specified in the Contract and their removal from the site on completion of the Contract." |
| PSA 8.2 | PAYMENT |
| PSA 8.2.1 | Fixed-charge and value-related items |
| | <i>REPLACE THE CONTENTS OF SUBCLAUSE 8.2.1 WITH THE FOLLOWING:</i> |
| PSA 8.2.1.1 | Fixed-charge items |
| | "Payment of fixed charges in respect of item 8.3.1 will be made as follows: |
| | <ol style="list-style-type: none"> (a) EIGHTY PER CENT (80%) of the sum tendered will be paid when the facilities have been provided and approved; (b) The remaining TWENTY PER CENT (20%) will be paid when the works have been completed, the facilities have been removed and the site of the Contractor's establishment has been cleared and cleaned to the satisfaction of the Engineer. |
| | No adjustment will be made to the sum tendered in respect of item 8.3.1 should the value of the works finally executed or the time for completion vary in any way from that specified in the tender. |

PSA 8.2.1.2 Value-related items

Payment for the sum tendered under item 8.3.2 will be made in three separate instalments as follows:

- (a) The first instalment, which is 40% of the sum, will be paid when the Contractor has fulfilled all his obligations to date under this specification, the General Conditions of Contract and the Special Conditions of Contract, and when the value of work certified for payment, excluding materials on site and payments for preliminary and general items, is equal to not less than 5% of the total value of the work listed in the Schedule of Quantities.
- (b) The second instalment, which is 40% of the sum, will be made when the amount certified for payment, including retention moneys but excluding this second instalment, exceeds 50% of the tender sum.
- (c) The final payment, which is 20% of the sum, will be made when the works have been certified as completed and the Contractor has fulfilled all his obligations to date under this Specification, the General Conditions of Contract and the Special Conditions of Contract.

Should the value of the measured work finally completed be more or less than the tender sum, the sum tendered under item 8.3.2 will be adjusted up or down in accordance with the provisions of Clause 53 of the Conditions of Contract, and this adjustment will be applied to the third instalment."

PSA 8.2.2 Time-related items

REPLACE THE CONTENTS OF SUBCLAUSE 8.2.2 WITH THE FOLLOWING:

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

PSA 8.3 SCHEDULED FIXED-CHARGE AND VALUE-RELATED ITEMS

REPLACE THE CONTENTS OF SUBCLAUSE 8.3.1 WITH THE FOLLOWING:

PSA 8.3.1 Fixed preliminary and general charges Unit: sum

The sums tendered shall include full compensation for all fixed-charge preliminary and general charges as described in subclause PSA 8.1.2.2. Payment will be made as described in subclause PSA 8.2.1.1.

PSA 8.3.2 Value-related preliminary and general chargesUnit: sum

The sums tendered shall include full compensation for all value-related preliminary and general charges as described in subclause PSA 8.1.2.2. Payment will be made as described in subclause PSA 8.2.1.2."

PSA 8.4 SCHEDULED TIME-RELATED ITEMS

REPLACE THE CONTENTS OF SUBCLAUSE 8.4 WITH THE FOLLOWING:

PSA 8.4.1 Time-related preliminary and general charges Unit: sum

The sum tendered shall include full compensation for all time-related preliminary and general charges as described in subclause PSA 8.1.2.2. Payment will be made as described in subclause PSA 8.2.2."

PSA 8.4.6 Contractor's initial obligations in respect of the OH&S Act and Construction Regulations, 2014

The tendered sums shall include full compensation to the Contractor for compliance with all the requirements of the Occupational Health and Safety Act, 1993, and the latest Construction Regulations, disaster management Act the Client's Health and Safety requirements. The Health and Safety Officer/s, accommodation, transport, communication implements, consultations, meetings and any other thing necessary for the completion of the aspect, at all times for the full duration of the Contract. The successful tenderer shall provide the Engineer with a complete breakdown of the tendered sums.

The time related sums will be paid to the Contractor, in equal monthly amounts, subject to proper compliance as accepted by the Engineer.

PSA 8.4.7 Contractor's Time-Related Obligations with Respect to Health and Safety

The Contractor shall tender lump sums to cover his time-related costs for on-going compliance with health and safety requirements as stated in PSA 8.4.6, above, for the duration of the Contract.

- a) Provision of Construction Manager and alternate
- b) Provision of Assistant Construction Manager(s)
- c) Provision of Health and Safety Officer
- d) Provision of Construction supervisors and assistant construction supervisors
- e) Maintenance of H&S file
- f) Implementation and Management of the Health and Safety Plan
- g) Enforcing of Hazard Identification and Risk Assessment
- h) Implementation of Method Statements and Safe Work Procedures
- i) Ensuring sub-contractors' compliance with statutory requirements, including compliance with the requirements of the latest COVID-19 Regulations, published in terms of the Disaster Management Act (Act 57 of 2002) and monitoring and auditing of sub-contractors
- j) Occupational health and safety training, promotion and awareness
- k) Ensuring public health and safety
- l) All other time related costs associated with complying with the requirements of the OHS Act, Construction Regulations 2014, all other relevant regulations in terms of the OHS act and the Health and Safety Specifications, for the duration of the Contract

PSA 8.4.8 Submission of Health and Safety File

The Contractor shall tender lump sums in the Schedule of Quantities to cover his fixed costs for the proper compliance with the requirements of the Occupational Health and Safety Act, 1993 (Act 85 of 1993) (OHS Act), the Construction Regulations 2014 issued in terms of Section 43 of the Occupational Health and Safety Act, all other relevant OHS regulations and the Health and Safety Specifications for the project, herein. The amount tendered and paid shall be full compensation for:

- a) Preparation of Project Specific Health and Safety Plan

- b) Carrying out a Hazard Identification and Risk Assessment
- c) Preparation and maintenance of H&S File
- d) Preparation of Method Statements and Safe Work Procedures
- e) Emergency Preparedness and Response plan (this item should include: First Aid, Fire and Explosions, Acts of Nature, Hazardous Chemical Substance and Flammable Substances spillage, Political unrest and violence and/or Terrorism)
- f) Occupational health provisions (Medicals – pre- and post-employment; Physical and Psychological for work at elevated heights; Medical surveillance for hazardous work; baseline & audiometric screening tests; HIV and AIDS Programme; etc.)
- g) Compliance with the requirements of the latest COVID-19 Regulations, published in terms of the Disaster Management Act (Act 57 of 2002).
- h) Inoculation of Contractor's personnel for working on Wastewater Treatment Works
- i) Provision of Personal Protective Equipment and clothing, including but not limited to: Overalls, hard-hats, gloves, safety boots, gumboots, ear protection, dust masks, safety goggles, safety harnesses, reflective vests, etc.
- j) Provision of Occupational Health and Safety equipment
- k) Ensuring public health and safety
- l) Occupational health and safety signage, pictograms and notices
- m) All other fixed costs associated with complying with the requirements

PSA 8.6 PRIME COST ITEMS

REPLACE SUBCLAUSE 8.6 WITH THE FOLLOWING:

PSA 8.6 PRIME COST SUMS

- (a) Description of item to which Prime Cost Sum applies Unit: PC Sum
- (b) Charge required by Contractor on subitem (a) above Unit: %

Subitems (a) and (b) will be provided in the Schedule of Quantities for each different item to which a Prime Cost Sum applies.

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

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

If the Contractor shall have omitted within his tender to insert a tendered percentage under subitem (b), or tendered a zero percentage, the Contractor's tendered rate for subitem (b) shall be deemed to be zero and the Contractor shall not be entitled to any payment under subitem (b).

Note in connection with additional tests required by the Engineer:

When a PC sum is included in the Schedule of Quantities for additional tests required by the Engineer, the Contractor shall be responsible for both the cost of normal testing as described in subclause PS 8.2 in portion 1 of the Project Specifications and for the cost of any additional test that indicates that the specifications have not been complied with."

PSA 8.7 DAYWORK

REPLACE THE CONTENTS OF SUBCLAUSE 8.7 WITH THE FOLLOWING:

"Measurement and payment shall be in accordance with the provisions of Subclause 6.5.1.3 of the Conditions of Contract."

ADD THE FOLLOWING ITEM:

PSA 8.8.4 LOCATION AND PROTECTION OF EXISTING SERVICES

- (a) Water and Sewer Pipes Unit: PC Sum
- a) Electrical and Other Cables Unit: PC Sum
- (b) Charge required by Contractor on sub item (a) and (b) above Unit: %

Subitems (a) and (b) will be provided in the Schedule of Quantities for each different item to which a Prime Cost Sum applies.

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

If the Contractor shall have omitted within his tender to insert a tendered percentage under subitem (b), or tendered a zero percentage, the Contractor's tendered rate for subitem (b) shall be deemed to be zero and the Contractor shall not be entitled to any payment under subitem (b).

PSA 8.9 MOTOR VEHICLE

- (a) Provision of motor vehicle
(type of vehicle to be identified)..... number
- (b) Kilometres travelled by motor vehicle
(type of vehicle to be identified)kilometre (km)

The unit of measurement for subitem (a) shall be the number of vehicles (type of vehicle specified) complete as specified which are provided on the Engineer's instructions.

The unit of measurement for subitem (b) shall be the number of kilometres run in each type of vehicle supplied on the Engineer's instructions."

PSA 8.11 Miscellaneous items

An item which, is included in the payment clause column of the Schedule of Quantities, referring to this clause will be measured under the unit scheduled.

The sum or rate for such item shall cover the cost of all materials, labour and plant required to execute and complete the work as specified, described in the Schedule of Quantities or shown on the drawing(s).

PSA 8.13 Environmental Management Requirements

The tendered monthly amount shall represent full compensation for that part of the contractor's general obligations in terms of the environmental management plans and specifications which are mainly a function of time. This includes inter alia payment of all costs of the approved designated environmental office (DEO) and other staff contemplated in the administration of the environmental obligations, including the transport of employees on site. Payment will be monthly.

The tendered sums shall include full compensation to the Contractor for compliance with all the requirements of the Environmental Management Plan and all relevant Environmental Authorisation Requirements), for the full duration of the Contract. The successful tenderer shall provide the Engineer with a complete breakdown of the tendered sums.

The time related sums will be paid to the Contractor, in equal monthly amounts, subject to proper compliance as accepted by the Engineer.

PSA 8.14 Community Liaison Officer (CLO)

A provisional sum is included to allow for the salary of a person working full time as the Community Liaison Officer for the duration of the construction on this Contract. The Contractor shall ensure that the salary and other paid expenses to which the Community Liaison Officer is entitled are paid timeously in accordance with the payment dates of his own staff. For details of the duties of the CLO refer to PS 4.

A separate item for overheads, charges and profit on the above item is applicable.

B1 SECTION 1200: GENERAL REQUIREMENTS AND PROVISIONS

B 1202 SERVICES

ADD THE FOLLOWING:

"Before work commences, the Contractor shall contact all private owners or public authorities controlling services to allow them to protect, move or relocate a service as required, or to confirm that all such work has been completed.

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

B 1204 PROGRAMME OF WORK

INSERT THE FOLLOWING BEFORE THE FIRST PARAGRAPH:

"A bar-chart programme shall be provided showing the various activities in such detail as may be required by the engineer. The programme shall be updated monthly in accordance with the progress made by the contractor. The critical path of the programme of work shall also be indicated.

In compiling the programme of work, the contractor shall incorporate the following important factors specified in these specifications:

- a) The specified contract period.
- b) Percentage of work to be done by SMME and labour-intensive work including a breakdown of the labour-intensive work.
- c) Work done by local manufacturers and suppliers
- d) Weather limitations regarding the application of bituminous products as specified in sections 4100, 4200, 4400 and 4500 of the standard specifications.
- e) The relocation and protection of services.
- f) Accommodation of traffic proposals.
- g) Phase construction detail relating to the relocation and protection of services, accommodation of traffic and weather limitations.

The contractor shall take note of various factors contained in these specifications which will have a significant influence on the compilation of the programme of work."

B 1205 WORKMANSHIP AND QUALITY CONTROL

REPLACE THE THIRD PARAGRAPH WITH THE FOLLOWING:

"The contractor shall determine his own frequencies at which quality or process control tests are to be undertaken. The engineer will, however, undertake all acceptance control tests for the judgement of workmanship and quality of products."

ADD THE FOLLOWING AT THE END OF THIS CLAUSE:

"The engineer shall, for the purpose of acceptance control on products and workmanship, assess test results and measurements in accordance with the provisions of section 8300 of the standard specifications (quality control scheme 2). Where small quantities of work are involved, a lot shall mean a full day's production for a specific item of work subject to acceptance control testing."

B 1206 THE SETTING-OUT OF WORK AND PROTECTION OF BEACONS

ADD THE FOLLOWING:

“Before commencing construction the contractor shall align the road horizontally according to the information given on the drawings and shall establish a stake line for controlling purposes. Subsequently he shall supply the Engineer’s Representative with a full set of cross-sections taken at 20m intervals along the centreline of the road. These cross-sections shall cover the full width of the road reserve. Stake-line beacons shall be clearly marked and protected during construction. “

AMEND THE FIRST LINE OF THE LAST PARAGRAPH AS FOLLOWS:

“The setting-out of work including the survey and staking of the new road centreline will not be measured and paid for

B1229 SABS CEMENT SPECIFICATIONS

REPLACE THE LAST PARAGRAPH OF THIS CLAUSE WITH THE FOLLOWING:

“Where reference is made in this specification or the standard specifications to the cement specifications, e.g. SABS 471: Portland cement and rapid hardening Portland cement, it shall be replaced with the new specification:

SABS ENV 197-1: Cement-composition, specifications and conformity criteria.

Part 1: Common cements.

Furthermore, where reference is made in this specification or the standard specifications to the different cement types, the following new names/types shall apply:

| Old product nomenclature | Typical new product nomenclature | |
|--------------------------|----------------------------------|-----------------------|
| | Cement type | Cement strength class |
| OPC | CEM I | 32,5 |
| | CEM I | 32,5R |
| RHC | CEM I | 42,5 |
| | CEM I | 42,5R |
| LASRC | No provision made | No provision made |
| PC15SL | CEM II/A-S | 32,5 |
| | CEM II/A-S | 32,5R |
| | CEM II/A-S | 42,5 |
| PC15FA | CEM II/A-V | 32,5 |
| | CEM II/A-V | 32,5R |
| | CEM II/A-W | 32,5 |
| | CEM II/A-W | 32,5R |
| RH15FA | CEM II/A-V | 42,5 |
| | CEM II/A-V | 42,5R |
| | CEM II/A-W | 42,5 |
| | CEM II/A-W | 42,5R |
| PBFC | CEM III/A | 32,5 |
| | CEM III/A | 32,5R |
| PFAC | CEM II/B-V | 32,5 |
| | CEM II/B-W | 32,5 |
| RH30SL | CEM II/B-S | 32,5R |
| | CEM II/B-S | 42,5 |
| RH40SL | CEM III/A | 32,5R |
| | CEM III/A | 42,5 |

CEM I 32,5, CEM II A-S 32,5, CEM II/A-V 32,5, or CEM III A may be used for the

manufacture of reinforced concrete members.”

ADD THE FOLLOWING NEW CLAUSES:

B 1230 CONTRACTOR'S ACTIVITIES ON PRIVATE PROPERTY

(a) Action required prior to entering property

The contractor shall not enter onto private property or property not belonging to the employer for the purpose of carrying out any work in connection with the contract without having completed the following formalities well ahead of the intended date for entering such property:

- h) The contractor shall give notice, in writing, to the owner, lessee or occupier, on a form approved by the engineer, of his intention of entering upon the property, together with full details of the work he intends to carry out on the property and the intended dates and duration of occupation.
- i) The contractor shall arrange a meeting with the owner, lessee or occupier, to:
 - conform that the owner, lessee or occupier, has permitted the contractor to enter upon the property for the said purpose;
 - obtain details from the owner, lessee or occupier, regarding any special precautions that should be taken by the contractor during the execution of the works;
 - record details, with photographs if necessary, of the condition of the property at that stage, including any defects in buildings, swimming pools, outbuildings, fences, etc. that may be affected by his activities;
 - record in writing the details of the above; the form and substance of such records and agreements shall be subject to the engineer's approval and a copy of the details as recorded shall be sent to the engineer for his records and his approval.
- j) In the event of the contractor failing to reach agreement with the owner, lessee or occupier of the property on any of the matters referred to above, the matter shall be referred to the engineer for further action.

ADD THE FOLLOWING NEW CLAUSES:

B 1231 MEASUREMENT AND PAYMENT

(e) Materials on the site

ADD THE FOLLOWING TO THE END OF THE CLAUSE:

“The engineer may at his sole discretion allow payments under "Materials on the site" in respect of any construction materials, if stored off-site, providing that:

- k) the site selected for this purpose is approved by the engineer;
- l) such land is physically separated from any production plant or operation;
- m) only materials for use under this contract are stockpiled on such land, and

the contractor has provided proof of an agreement with the owner of such land that the owner has no objection to using the land for these purposes and has no claim whatsoever on any materials stockpiled on such land.”

ADD THE FOLLOWING SUBCLAUSE:

“(g) Payment certificates

With reference to Clause 6.10.1 of the General Conditions of Contract, the Engineer's Certificate will only be issued after he has received a draft certificate prepared by the Contractor at his own expense in the form prescribed by the Engineer. The cost of duplicating and delivering copies of the certificate to the Contractor, the Engineer and the Employer shall be borne by the Contractor. The Engineer and the Employer require a total of four sets of A4-sized paper copies."

ADD THE FOLLOWING ITEM:

| Item | Unit |
|---|-------------------------------|
| B12.02 Excavation for Services | |
| (a) Excavation in search of existing services in soft material situated within the following depth ranges below the surface level | |
| (i) 0m to 2m | cubic metre (m ³) |
| B12.03 Relocation and protecting of existing services: | |
| (a) Relocation, including lowering or raising, protection and/or repair of existing services..... | Prov.Sum |
| (b) Contractor's handling costs, profit and all other charges in respects of sub items B12.03(a)..... | percentage (%) |
| B12.09 Supply transport and erect contract signboards | |
| (a) Contract sing-board number | (No) |
| (b) Mini-bus vehicle supplied twice per month..... | Month |
| B12.10 Construction Monitoring for the Employer's Agent | |
| (a) Assistant Resident Engineer - Full time | PC.Sum |
| (b) Contractor's handling costs, profit and all other charges in respects of sub items B12.10(a) | percentage (%) |
| (c) Environmental Control Officer | PC.Sum |
| (d) Contractor's handling costs, profit and all other charges in respects of subitems C12.10(c) | percentage (%) |
| (e) Institutional and Social Development | PC.Sum |
| (f) Contractor's handling costs, profit and all other charges in respects of subitems C12.10(e) | percentage (%) |
| (g) OHS Agent | PC.Sum |
| (h) Contractor's handling costs, profit and all other charges in respects of subitems C12.10(g) | percentage (%) |

The prime cost items shall be paid for in accordance with the provisions of the general conditions of contract. The tendered percentage is a percentage of the amount actually spent under the relevant prime cost item, which shall include full compensation for the handling costs of the contractor, and the profit in connection with providing the specified service through consultation with the Engineer. "

PSAB ENGINEER'S OFFICE

PSAB 3 MATERIALS

PSAB 3.1 NAMEBOARDS

REPLACE THE FIRST SENTENCE OF SUBCLAUSE 3.1 OF SANS 1200 AB WITH THE FOLLOWING:

"The Contractor shall supply and erect at locations approved by the Engineer, the number of contract nameboards specified in Portion 1 of the Project Specifications, which, unless otherwise specified in the Contract, shall comply with the recommendations for the standard board of the South African Association of Consulting Engineers with regard to size, painting, decorating and detail, and the requirements described hereunder."

PSAB 3.2 OFFICE BUILDING(S)

REPLACE THE WORDS "as scheduled" IN PARENTHESIS IN THE FIRST LINE OF SUBCLAUSE 3.2 OF SANS 1200 AB WITH "as specified in Portion 1 of the Project Specifications";

AND REPLACE SUBCLAUSE 3.2(j) OF SANS 1200 AB WITH THE FOLLOWING:

- "(j) An air-conditioning unit capable of both heating in summer and cooling in winter."
- k) Electrical installation to include a light and two 15A plug points
 - l) One refrigerator of at least 100 litre capacity
 - m) One kettle of at least 2 litre capacity
 - n) One tea set comprising six cups and saucers, six teaspoons, one teapot, one sugar bowl and one milk jug
 - o) Covered parking for four vehicles
 - p) Uncovered parking space for two vehicles
 - q) Two "Barhold" or similar wall mounted racks each with 6 clamps suitable for hanging A0 sized drawings
 - r) One large meeting table (For meeting room only)
 - s) Twelve additional chairs (For meeting room only)

ADD THE FOLLOWING SUBCLAUSE TO CLAUSE 3:

"PSAB 3.3 CARPORT

The Contractor shall construct the number of carports specified in Portion 1 of the Project Specifications, for the sole use of the Engineer and his staff. Each carport shall be constructed so that the vehicle parked under it is always protected against the direct rays of the sun. The carport area shall be at least 20 m² and the floor shall be covered with a layer of crushed stone to alleviate dusty and muddy conditions. The carport(s) shall be positioned so as to provide easy and convenient access to the Engineer's office."

PSAB 4 PLANT

PSAB 4.1 TELEPHONE

REPLACE SUBCLAUSE 4.1 OF SANS 1200 AB WITH THE FOLLOWING:

"Subject to satisfactory transmission and reception quality in the vicinity of the Site, the Contractor shall provide the Engineer's Representative and Site Staff with mobile phones with service contracts from a cellular service provider with reliable network coverage around the area as specified in Portion 1 of the Project Specifications for the exclusive use of the Engineer and his staff. The Contractor shall further insure the

mobile phones against loss or damage from whatever cause, and shall ensure that all mobile phone accounts are promptly paid on the due dates for payment. The Contractor shall further, at his own cost, ensure the prompt repair of all mobile phones provided under this clause, when reasonably required by the Engineer."

ADD THE FOLLOWING NEW SUBCLAUSES TO CLAUSE 4 OF SANS 1200 AB:

PSAB 4.3 SURVEY EQUIPMENT

The Contractor shall provide on site and make available for the exclusive use of the Engineer and his staff, the survey equipment listed in Portion 1 of the Project Specifications.

All survey equipment provided by the Contractor shall be in good condition, properly calibrated and fit for the purpose."

PSAB 5 CONSTRUCTION

PSAB 5.4 TELEPHONE

REPLACE THE CONTENTS OF SUBCLAUSE 5.4 OF SANS 1200 AB WITH THE FOLLOWING:

"PSAB 5.4.2 Mobile phones

The Contractor shall advise the cellular service provider of any faults which develop in the mobile phone service and/or the mobile phone handsets and shall, in such circumstances, arrange for the earliest possible restoration of the said service.

The costs of any necessary repairs and/or the replacement of components to the handsets of the mobile phones shall be for the Contractor's account.

The Contractor shall ensure that all accounts for mobile phone calls and the respective service contracts are promptly paid. The Contractor shall, on production of an itemised statement, be reimbursed only for the cost of the Engineer's cellular telephone calls."

ADD THE FOLLOWING NEW SUBCLAUSES TO CLAUSE 5 OF SANS 1200 AB:

"PSAB 5.6 COMPUTER EQUIPMENT

All computer equipment provided shall be kept fully serviceable at all times by the Contractor. The Contractor shall have any defective equipment repaired or replaced at his own cost within 12 hours after notification by the Engineer's staff.

The Contractor shall further provide at his own cost, all paper and black ink cartridges and other consumables reasonably required by the Engineer.

PSAB 5.7 SURVEY EQUIPMENT

All survey equipment provided by the Contractor shall be kept fully serviceable at all times by the Contractor. The contractor is to provide valid calibration certificates for all survey equipment. The Contractor shall have any defective equipment repaired or replaced at his own cost within 12 hours after notification by the Engineer's staff.

In terms of Sub-clause 5.5 one suitable skilled surveyor shall be made available for the Project during working hours from commencement to the completion of the Works. The Surveyor shall carry out surveys or measurements for the Contractor, ensuring that pipes and Manholes are laid to correct invert levels as provided in the drawing, or as required by the Project Engineer.

The availability of the survey equipment and surveyor shall be included in the tendered rates for pipelaying.

The Contractor shall provide the following survey equipment on the Site from the commencement to the completion of the Works:

- i) One automatic reading Engineer's level plus tripod
- ii) One levelling staff (5 m long, 1 cm graduations)
- iii) One staff angle bubble
- iv) One metal change-point for levelling
- v) One separate plumb-bob
- vi) One spirit level (one metre long)
- vii) One hammer (2 kg) with steel or wooden pegs as necessary
- viii) One 50 m steel or glass fibre tape
- ix) One 5,0 m (or longer) retractable steel tape

The equipment may be shared by arrangement between the Contractor and the Engineer or his representative on Site. The Contractor shall keep the equipment continuously insured against any loss, damage, or breakage and he shall indemnify the Engineer and the Employer against any claims in this regard. Upon completion of the Works the survey equipment as listed above shall revert to the Contractor.

The Contractor shall maintain the equipment in good working order and keep it clean until the completion of the Works.

| | | |
|--------------------|--|-----------------|
| PSC | SITE CLEARANCE | |
| PSC 3 | MATERIALS | |
| PSC 3.1 | DISPOSAL OF MATERIAL | |
| | <i>ADD THE FOLLOWING:</i> | |
| | "The Contractor shall obtain his own dumping sites for the disposal of material and all transport costs shall be included in the rates tendered for site clearance." | |
| PSC 5 | CONSTRUCTION | |
| PSC 5.1 | AREAS TO BE CLEARED AND GRUBBED | |
| | <i>ADD THE FOLLOWING:</i> | |
| | "Pipeline routes shall be cleared to a distance of 1,0 m on both sides of the pipeline centre line. Route pegs or markers shall not be destroyed or damaged during clearing operations." | |
| PSC 5.5 | RECLEARING OF VEGETATION | |
| | <i>ADD THE FOLLOWING:</i> | |
| | "When areas have to be re-cleared on the written instructions of the Engineer, such re-clearing shall be carried out at the Contractor's own cost and the Contractor is therefore advised not to clear the areas too soon." | |
| PSC 8 | MEASUREMENT AND PAYMENT | |
| PSC 8.2 | PAYMENT | |
| PSC 8.2.1 | Clear and grub | |
| | <i>REPLACE THE FIRST LINE WITH THE FOLLOWING:</i> | |
| | "The area designated by the Engineer to be cleared and grubbed will be measured in square metre to the nearest square metre or, " | |
| | <i>ADD THE FOLLOWING TO THIS CLAUSE:</i> | |
| "PSC 8.2.11 | Take down and re-erect existing fences | Unit : m |
| | The rate shall cover the cost of taking down the fences, coiling wire, sorting, stacking and guarding all materials, the cost of loading, transporting and off-loading such materials, the cost of re-erecting the fence in its original position using the dismantled material, the cost of temporary bracing of the fencing sections not taken down and the cost of appurtenant materials that may be required to restore the fence to its original condition before dismantling." | |

| | |
|-------------------|---|
| PSD | EARTHWORKS |
| PSD 2 | INTERPRETATIONS |
| PSD 2.1 | SUPPORTING SPECIFICATIONS |
| | <i>REPLACE SUBCLAUSE 2.1.2 WITH THE FOLLOWING:</i> |
| "PSD 2.1.2 | Any of the other SANS 1200 specifications may form part of the Contract documents." |
| PSD 2.3 | DEFINITIONS |
| | <i>REPLACE THE WORD AND THE DEFINITION FOR "Borrow" WITH THE FOLLOWING:</i> |
| | "Borrow material: Material, other than material obtained from excavations required for the works, obtained from sources such as borrow pits or the authorised widening of excavations. 'Borrow' shall have a corresponding meaning." |
| | <i>REPLACE THE DEFINITION FOR "Specified density" WITH THE FOLLOWING:</i> |
| | "Specified density: The specified dry density expressed as a percentage of modified AASHTO dry density." |
| | <i>REPLACE THE DEFINITION FOR "Stockpile" WITH THE FOLLOWING:</i> |
| | "Stockpile (verb): The process of selecting and, when necessary, loading, transporting and off-loading material in a designated area for later use for a specific purpose" |
| | <i>ADD THE FOLLOWING DEFINITIONS:</i> |
| | "Commercial source: A source of material provided by the Contractor, not the Employer, and including any borrow pit, provided by the Contractor |
| | Fill: An embankment or terrace constructed of material obtained from excavations or borrow pits. In roads it includes the earthworks up to the underside of the selected subgrade level. |
| | Fill (material): Material used for the construction of an embankment or terrace |
| | Roadbed: The natural in situ material on which the fill or, in the absence of fill, the pavement layers are constructed" |
| PSD 3 | MATERIALS |
| PSD 3.1 | CLASSIFICATION FOR EXCAVATION PURPOSES |
| PSD 3.1.1 | Method of classifying |
| | <i>ADD THE FOLLOWING:</i> |
| | "The classification of material other than 'soft excavation' shall be agreed upon before excavation may commence. |
| | The Contractor shall immediately inform the Engineer if and when the nature of the material being excavated changes to such an extent that a new classification is warranted for further excavation. Failure on the part of the Contractor to advise the Engineer in good time shall entitle the Engineer to reclassify, at his discretion, such excavated material." |

PSD 3.2.3 Material suitable for backfill or fill against structures

REPLACE THE CONTENTS OF THIS SUBCLAUSE WITH THE FOLLOWING:

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

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

PSD 3.3 SELECTION

ADD THE FOLLOWING SUBCLAUSE:

"PSD 3.3.3 Selection in borrow pits and excavations

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

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

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

PSD 4 PLANT

PSD 4.4 DETECTORS

REPLACE THE CONTENTS OF SUBCLAUSE 4.4 WITH THE FOLLOWING:

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

PSD 5 CONSTRUCTION

PSD 5.1 PRECAUTIONS

PSD 5.1.1 Safety

PSD 5.1.1.1 Barricading and lighting

REPLACE "Machinery and Occupational Safety Act, 1983 (Act 6 of 1983)" WITH "Occupational Health and Safety Act, 1993 (Act 85 of 1993)".

PSD 5.1.1.2 Safeguarding of excavations

REPLACE "Machinery and Occupational Safety Act" WITH "Occupational Health and Safety Act, 1993 (Act 85 of 1993)".

PSD 5.1.1.3 Explosives

REPLACE THE CONTENTS OF THIS SUBCLAUSE WITH THE FOLLOWING:

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

- (a) The Engineer may prohibit the use of explosives in cases where, in his opinion, the risk of injury to persons or damage to property or to adjoining structures is too high. Such action by the Engineer does not entitle the Contractor to additional payment for having to resort to less economical methods of construction.
- (b) The Engineer's prior written approval shall be obtained for each and every blasting operation. This approval may be withheld if the Contractor does not use explosives responsibly and carefully.
- (c) The Contractor shall comply fully with the requirements of the Explosives Act, 1997 (Act No 83 of 1997) and all other legislation and regulations as may be applicable to blasting and the use of explosives.
- (d) Before blasting is undertaken, the Contractor shall satisfy the Engineer that he has established whether or not the insurers concerned require pre- and post-blasting inspections of buildings and structures within a certain radius of the proposed blasting.

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

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

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

PSD 5.1.2 Existing services

PSD 5.1.2.2 Detection, location and exposure

REPLACE THE CONTENTS OF SUBCLAUSE 5.1.2.2 WITH THE FOLLOWING:

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

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

(a) In roadways: 90% Mod AASHTO density; and

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

Where hand excavations to expose underground services have to be carried out in roadways, the Contractor shall reinstate the road layerworks in accordance with the provisions of subclause 5.9 of SANS 1200 DB.

Payment in respect of exposing the services by means of hand excavation as described above, will be made in accordance with subclause PSD 8.3.8.1.

Payment in respect of reinstating layerworks in roadways will be made in accordance with subclause 8.3.6.1 of SANS 1200 DB (as amended)."

PSD 5.1.2.3 Protection of cables

REPLACE SUBCLAUSE 5.1.2.3 WITH THE FOLLOWING:

"5.1.2.3 Protection during construction

Further to the requirements of subclause 5.4.2 of SANS 1200 A (as amended), major excavating equipment and other plant shall not be operated dangerously close to known services. Where necessary, excavation in close proximity to known services shall be carefully carried out with suitable hand tools, excluding picks wherever their use could damage the services. No additional payment will apply to such more difficult work.

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

PSD 5.1.2.4 Negligence

DELETE SUBCLAUSE 5.1.2.4.

PSD 5.1.6 Road traffic control

DELETE THE SECOND SENTENCE OF SUBCLAUSE 5.1.6.

PSD 5.2 METHODS AND PROCEDURES

PSD 5.2.2 Excavation

PSD 5.2.2.1 Excavation for general earthworks and for structures

ADD THE FOLLOWING TO PARAGRAPH (b):

"When the nature of the material precludes the above procedure, additional excavations shall be carried out to provide working space for the erection of formwork. The tendered

rate for item 8.3.5 will be deemed to include the cost of a working width of 600 mm, but the Contractor may excavate a greater working width at no additional cost to the Employer."

REPLACE THE FIRST SENTENCE OF PARAGRAPH (e) WITH THE FOLLOWING:

"Where excavations have been carried below the authorised levels, the Contractor shall backfill such excavations to the correct level with approved gravel compacted to 90% of modified AASHTO density or to the density of the surrounding material, whichever is the higher density.

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

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

PSD 5.2.2.3 Disposal

REPLACE THE SECOND SENTENCE WITH THE FOLLOWING:

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

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

Payment to the Contractor in respect of locating and making arrangements for suitable spoil sites and spoiling material at the such sites will be made in accordance with the provisions of subclause PSD 8.3.15."

ADD THE FOLLOWING SUBCLAUSE IN SUBCLAUSE 5.2.2:

"PSD 5.2.2.4 Selection and stockpiling

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

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

When required, or when ordered by the Engineer, material shall be stockpiled for later use. The additional costs for stockpiling material shall be paid to the Contractor in accordance with the provisions of subclause PSD 8.3.14."

PSD 5.2.5 Transport for earthworks

REPLACE THE CONTENTS OF SUBCLAUSE 5.2.5 WITH THE FOLLOWING:

"The transport of all excavated materials, irrespective of the distance and source, shall be deemed to be free-haul, the cost of which is included in the Contractor's tendered rates and prices for the excavation of the materials. No separate compensation shall apply for the transportation of excavated materials."

PSD 7 TESTING

PSD 7.2 TAKING AND TESTING OF SAMPLES

REPLACE THE CONTENTS OF THIS SUBCLAUSE WITH THE FOLLOWING:

"The Contractor shall arrange with the approved independent laboratory engaged by the Contractor in terms of subclause PS 8.2.1 of Portion 1 of the Project Specifications to carry out sufficient tests on a regular basis as agreed between him and the Engineer to determine whether the degree of compaction, and, where applicable, the quality of materials used, comply with the Specifications and shall submit the results of these tests to the Engineer in a form approved by him.

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

PSD 8 MEASUREMENT AND PAYMENT

PSD 8.3 SCHEDULED ITEMS

PSD 8.3.1 Site preparation

REPLACE SUBCLAUSES 8.3.1.1 AND 8.3.1.2 WITH THE FOLLOWING:

"Where site preparation such as clearing, grubbing, the removal of large trees or the removal and stockpiling of topsoil is required, the provisions and scheduled items of SANS 1200 C shall apply."

PSD 8.3.2 Bulk excavation

REPLACE THE CONTENTS OF ITEM WITH THE FOLLOWING:

"(a) Excavate in all materials and use for embankment or backfill as ordered, from:

- (1) Necessary excavations Unit: m³
- (2) Designated borrow pits Unit: m³
- (3) Commercial sources Unit: m³

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

Separate items will be scheduled for embankments and backfills for different parts of the works.

The tendered rates shall cover the cost of complying with all the precautions required in terms of subclause 5.1 of SANS 1200 D (as amended), in addition to the cost of excavating in all materials, basic selecting, loading, transporting, off-loading, spreading or backfilling, watering, compacting, final grading, complying with the

requirements for tolerances, providing for testing, finishing and tidying, all in accordance with the specifications.

In addition to the foregoing, the tendered rate for subitem (b) shall further include for the costs of royalties (if applicable), whilst the tendered rate for subitem (c) shall also include for the costs of finding a source of suitable material, for making arrangements with the owner of the source, for procuring the material, for the payment of all requisite royalties, charges or damages, and for transporting the material to the site regardless of the distance involved. No payment will be made for the removal of overburden or stockpiling at the commercial source and no extra over payment shall apply for excavating in intermediate, hard or boulder material."

- (b) Excavate in all materials and dispose Unit: m³

The unit of measurement shall be the cubic metre of material excavated, measured in place in accordance with subclause 8.2 of SANS 1200 D.

The tendered rates shall cover the cost of complying with all the precautions required in terms of subclause 5.1 of SANS 1200 D (as amended), in addition to the cost of excavating, basic selecting, loading, transporting, off-loading at the spoil site, maintaining and finishing the spoil site, all in accordance with the specifications.

- (c) Extra over subitems PSD 8.3.2(a)(1), PSD 8.3.2(a)(2) and PSD 8.3.2(b) for:

- (1) Intermediate excavation Unit: m³

- (2) Hard rock excavation Unit: m³

- (3) Boulder excavation, Class A Unit: m³

- (4) Boulder excavation, Class B Unit: m³

The rate shall cover the additional cost of the operations enumerated in subclauses 8.3.2.(a) and 8.3.2.(b) above for any portion of the excavation that is classified as intermediate, hard rock, boulder excavation class A or boulder excavation class B as applicable. (See Drawing D-2.)"

PSD 8.3.3 Restricted excavation

REPLACE THE WORDS "in 1 m increments" AT THE END OF THE FIRST SENTENCE OF SUBITEM (a) WITH "in the increments indicated in the Schedule of Quantities".

REPLACE "in 5.2.2.1 – 5.2.2.3 (inclusive)" AT THE END OF SUBCLAUSE (a) WITH "in subclauses 5.2.2.1 to 5.2.2.5 (inclusive)".

ADD THE FOLLOWING SUB-SUBITEM:

- "(c) Extra over subitem 8.3.3 (a) for hand excavationUnit: m³

This item shall apply to hand excavation ordered by the Engineer or when the Engineer considers that, owing to circumstances, excavation by mechanical excavators is not practicable. It shall not apply to hand excavation for trimming or finishing an excavation made by mechanical means.

The tendered rate shall include full compensation for the additional cost of excavating by means of hand tools."

PSD 8.3.4 Importing of materials

DELETE SUBITEM (a) OF 8.3.4.

PSD 8.3.6 Overhaul

DELETE SUBCLAUSE 8.3.6.

PSD 8.3.8 Existing services

PSD 8.3.8.1 Location

REPLACE ITEM 8.3.8.1 WITH THE FOLLOWING:

"8.3.8.1 Hand excavation for locating and exposing existing services:

(a) In roadways Unit: m³

(b) In all other areas Unit: m³

The unit of measurement shall be the cubic metre of material excavated, measured in place according to the authorised or actual dimensions of the excavation, whichever is the lesser.

The tendered rates shall cover the cost of excavating in all materials by means of hand tools within authorised dimensions and at locations approved by the Engineer in accordance with the requirements of subclause PSA 5.4.1 for all precautionary measures necessary to protect the services from damage during excavation and backfilling, and for subsequent backfilling and compacting. Compaction of material in all areas except in roadways shall be to 90% of the modified AASHTO density.

The tendered rate for hand excavation in roadways shall include compensation for compacting excavated or selected backfill material to 93% of modified AASHTO density. Reinstating layerworks and surfacing shall be measured and paid for in terms of SANS 1200 DB.

The tendered rates shall also include for keeping excavations safe, for dealing with surface and subsurface water, for removing surplus excavated material from the site, for transporting all material, and for supplying adequate supervision during both excavation and backfilling operations."

PSD 8.3.10 Topsoiling

CHANGE THE UNIT TO "m³" AND REPLACE THE CONTENTS OF THIS ITEM WITH THE FOLLOWING:

"The unit of measurement shall be the cubic metre and the quantity shall be calculated from the authorised dimensions.

The tendered rate shall include loading of the topsoil from stockpiles, transporting it, and off-loading, spreading, shaping and lightly compacting the topsoil."

ADD THE FOLLOWING ITEMS IN SUBCLAUSE 8.3:

"PSD 8.3.14 Extra over items PSD 8.3.2.(a)(1) and PSD 8.3.3 for temporary stockpiling Unit: m³

The unit of measurement shall be the cubic metre of material from necessary excavations, temporarily stockpiled by the Contractor on the instructions of the Engineer, before being used in embankments or backfill. Measurements shall be taken in place in compacted embankment or backfill as the case may be.

The tendered rate shall include for the costs, additional to those provided for in PSD 8.3.2(a)(1) and PSD 8.3.3, of off-loading, forming and maintaining the stockpile for as long as is required, reloading and transporting.

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

**"PSD 8.3.15 Extra over items PSD 8.3.2(b) and PSD 8.3.3 for disposing of
spoil material on a site provided by the Contractor Unit: m³**

The unit of measurement shall be the cubic metre measured in accordance with subclause 8.2 of SANS 1200 D of surplus and/or unsuitable material disposed of, on the instruction of the Engineer, at a spoil site or spoil sites provided by the Contractor.

The tendered rate shall include full compensation for the additional cost of providing a spoil site or other means of disposing of surplus spoil material, for transporting the material regardless of the distance involved, for acceptance charges for such material and for all other incidental costs to dispose of the spoil material."

| | |
|-------------------|---|
| PSDB | EARTHWORKS (PIPE TRENCHES) |
| PSDB 3 | MATERIALS |
| PSDB 3.5 | <p>BACKFILL MATERIALS</p> <p><i>ADD THE FOLLOWING PARAGRAPHS TO SUBCLAUSE 3.5:</i></p> <p>"(c) Cement-stabilized backfilling</p> <p>Backfilling shall, where directed by the Engineer, be stabilized with 5% cement. The aggregate shall consist of approved soil or gravel containing stones not bigger than 38 mm and with a plasticity index not exceeding 10.</p> <p>The soil or gravel shall be mixed with 5% cement and shall be compacted in layers of 100 mm thick to 90% of modified AASHTO density.</p> <p>(d) Soilcrete backfilling</p> <p>The aggregate for soilcrete shall be mixed with 5% cement and shall consist of approved soil or gravel containing stones not bigger than 38 mm and with a plasticity index not exceeding 10.</p> <p>The soil or gravel shall be mixed in a concrete mixer with the cement and enough water to acquire a consistency that allows the mixture to be placed with vibrators to fill all voids between the pipe and the sides of the trench. Shuttering shall be used where necessary."</p> |
| PSDB 3.7 | <p>SELECTION</p> <p><i>REPLACE THE WORDS "if he so wishes" IN THE FIRST LINE OF THE SECOND PARAGRAPH WITH THE WORDS "at his own cost".</i></p> |
| PSDB 5 | CONSTRUCTION |
| PSDB 5.1 | PRECAUTIONS |
| PSDB 5.2 | <p>MINIMUM BASE WIDTHS</p> <p><i>REPLACE PARAGRAPH (a) WITH THE FOLLOWING:</i></p> <p>"Where two pipes are placed in the same trench, they shall be 300 mm apart and the specified side allowance shall still be applicable."</p> |
| PSDB 5.1.3 | <p>Accommodation of traffic, providing and maintaining access to properties</p> <p><i>REPLACE THE SEMI-COLON AND THE WORD "and" AT THE END OF SUBCLAUSE 5.1.3(a) WITH A FULL STOP AND REPLACE ITEM (b) WITH THE FOLLOWING:</i></p> <p>(b) Where necessary to achieve compliance by the Contractor with his obligations in terms of Sub-clause PS 8.5 of Portion 1 of the Project Specifications to provide and maintain pedestrian and vehicular access to properties affected by the Works, the Contractor shall construct and maintain to the satisfaction of the Engineer, such temporary access roads around, and/or steel or timber bridges over excavations in roads, pavements, entrances or accesses to properties.</p> |

Temporary pedestrian access bridges shall be at least 1,2 m wide and temporary access bridges for vehicles shall be at least 3,6 m wide. All temporary access bridges shall be fitted with handrails as well as protective mesh fencing on both sides.

On completion of the work, the Contractor shall dismantle and remove all such temporary constructions and reinstate these areas to their former condition.

Except only where the Engineer has included in the Schedule of Quantities, particular payment items specifically therefor, the Contractor will not be paid directly for the construction and maintenance of temporary access roads and/or the provision and maintenance of bridges as aforementioned, and the costs thereof shall be deemed included in the Contractor's tendered rates for excavation."

PSDB 5.6 BACKFILL

PSDB 5.6.3 Disposal of soft excavation material

REPLACE THE WORDS "unless otherwise required in the project specification." AT THE END OF SUBCLAUSE 5.6.3 WITH:

"... or to spoil in accordance with the requirements of subclause PSD 5.2.2.3, as instructed by the Engineer."

ADD THE FOLLOWING NEW SUBCLAUSES IN CLAUSE 5:

"PSDB 5.11 REMOVAL OF EXISTING PIPES

PSDB 5.11.1 Where shown on the Drawings or where so instructed by the Engineer, the Contractor shall excavate, expose and remove from the ground, existing water or process pipelines.

PSDB 5.11.2 If so instructed by the Engineer, the Contractor shall, before commencing with the excavation of the pipeline, expose the pipeline to be removed by means of careful hand excavation at positions agreed with the Engineer, in accordance with the requirements of subclause PSA 5.4.1 of Portion 1 of the Project Specifications. Measurement and payment for locating the exact positions of the pipelines where required by the Engineer shall be made in accordance with and under item PSD 8.3.8.1.

PSDB 5.11.3 Thereafter, the existing pipelines to be removed shall be carefully opened up by machine excavation to a depth of not more than 300 mm above the pipes after which the whole pipeline shall be fully exposed by means of careful hand excavation. The excavation width shall comply with subclause 5.2.

PSDB 5.11.4 The pipes and all specials encountered (eg. bends, valves, valve box covers and the like) shall be removed from the trench in a manner as to avoid causing damage and as approved by the Engineer, brought to the surface, cleaned sufficiently and stacked in such a manner as will facilitate the inspection of each pipe and special by the Engineer.

PSDB 5.11.5 Pipes and specials declared suitable by the Engineer for reuse shall be transported to the Employer's store area located at the site of the works, where they shall be off-loaded and neatly stacked to the satisfaction of the Engineer. The Contractor shall be responsible for obtaining a written receipt of all pipes so delivered to the Employer's store area.

PSDB 5.11.6 Pipes and specials which are declared unsuitable by the Engineer for reuse shall be removed from the site to a spoil site located by the Contractor.

PSDB 5.11.7 After removal of the pipelines, the trenches shall be backfilled using the excavated material and compacted to 90% modified AASHTO density. The provisions of subclauses 5.6 and 5.7 shall apply."

PSDB 8 MEASUREMENT AND PAYMENT

PSDB 8.3 SCHEDULED ITEMS

PSDB 8.3.2 Excavation

- (a) Excavate in all materials, for trenches, backfill compact and dispose of surplus material

REPLACE "of 1,0 m" IN THE FIRST SENTENCE OF 8.3.2(a) WITH:

"as specified in the Schedule of Quantities."

- (b) Extra over item (a) above for:

ADD THE FOLLOWING AT THE END OF THE EXISTING SUBITEM 2:

"No payments will be made under subitems (1) and (2) in respect of any materials measured and paid for under subitem 3 below."

AND ADD THE FOLLOWING NEW SUBITEMS IN 8.3.2(b):

"(3) Hand excavation where ordered by the Engineer in:

- (a) Soft material Unit: m³
- (b) Intermediate material Unit: m³
- (c) Hard material Unit: m³

The unit of measurement shall be the cubic metre of material, measured in place according to the authorised dimensions, which was excavated by hand on the specific prior written instructions of the Engineer; provided always that the Engineer's said instruction shall have stated that measurement and payment for such hand excavation will be in accordance with this item.

The tendered rate shall include full compensation for the additional cost, effort and time resulting from excavating in the respective materials using hand methods only.

The Engineer shall not be obliged to authorise payment under this item in respect of any hand excavation carried out (whether ordered in writing or otherwise), which hand excavation was in any case necessary to achieve compliance by the Contractor with his obligations under the Contract to

- (i) utilise construction appropriate to the nature of the specific parts of the works; and/or
- (ii) protect existing structures and/or services; and/or
- (iii) comply with all prevailing legislation and regulations.

- (4) Backfill stabilized with 5% cement where directed by the Engineer Unit: m³

The unit of measurement shall be the cubic metre of backfill material, measured in place after compaction according to the authorised dimensions, which was stabilized on the Engineer's instructions in accordance with subclause PSDB 3.5(c).

The tendered rate shall include full compensation for supplying the cement and for selecting, mixing, backfilling and compacting the stabilized material to 90% of modified AASHTO density.

- (5) Soilcrete backfill where directed by the Engineer Unit: m³

The unit of measurement shall be the cubic metre of soilcrete placed on the Engineer's instructions in accordance with subclause PSDB 3.5(d), measured in place according to the authorised dimensions.

The tendered rate shall include full compensation for supplying the cement and for selecting, mixing and placing the soilcrete as well as for the cost of shuttering if required."

PSDB 8.3.3 Excavation ancillaries

PSDB 8.3.3.4 Overhaul

REPLACE THE CONTENTS OF THIS ITEM WITH THE FOLLOWING:

"Measurement and payment shall be in accordance with subclause PSD 5.2.5."

"PSDB 8.3.8 Removal of existing pipes

- (a) Excavate in all materials to 300 mm above the pipelines Unit: m³

The unit of measurement shall be the cubic metre of material excavated for the removal of pipelines in accordance with PSDB 5.11, measured in place according to the authorised dimensions. Depth shall be measured from the ground surface on the centreline of the pipeline to 300 mm above the pipe barrel.

The tendered rate shall include for excavating by any method in all materials and placing the excavated material alongside the trench.

- (b) Excavate by hand to expose pipes Unit: m³

The unit of measurement shall be the cubic metre of material excavated to finally expose the pipeline by hand excavation methods in accordance with PSDB 5.11, measured in place according to the authorised dimensions and up to 100 mm below the pipe bottom. Separate items will be scheduled for each different diameter of pipe. The pipe volume as well as the volume of all associated structures such as junction boxes, manholes, valve chambers and the like shall be excluded from the volume of excavation measured.

The tendered rates shall be in full and final compensation for excavating by hand methods from a depth of 300 mm above the pipe barrel in accordance with PSDB 5.11.3 to expose the pipe to its bottom, irrespective of the type or class of pipe, as well as for excavating by hand around junction boxes, manholes, valve chambers and the like.

- (c) Remove pipes from trench and stack for inspection Unit: m

The unit of measurement shall be the linear metre of each type and diameter of pipe removed from the trench in accordance with subclause 5.11, measured in plan view along the centreline of the pipeline, without deduction for specials, junction boxes, manholes, valve chambers and the like as may be encountered. Separate items shall be scheduled for each different diameter of pipe.

The tendered rates shall be fully inclusive for uncoupling the individual pipes and specials, all additional excavation as may be necessary to facilitate the insertion of lifting slings or the utilisation of other lifting equipment, the provision and utilisation of all such lifting equipment as may be necessary (eg cranes), for lifting the pipes and specials out of the trench, cleaning and stacking them along the side of the trench for inspection, attending during the Engineer's inspection and recording the Engineer's decisions on each pipe/special. The tendered rate shall further include for the demolition and removal from the trench of all associated pipeline accessories as may be encountered, such as anchor blocks and the like, and the loading and removal of the debris to spoil.

(d) Stack pipes and specials declared reusable

(i) Pipes Unit: m

The unit of measurement shall be the linear metre of pipe declared reusable by the Engineer and delivered to the place or area specified in subclause PSDB 5.11. Separate items will be scheduled for each different diameter of pipe.

The tendered rates shall be fully inclusive for loading the pipes at the side of the trench, transporting to and off-loading at the location specified in PSDB 5.11, and carefully stacking separately according to the type, class and diameter of the pipes.

(ii) Specials Unit: number

The unit of measurement shall be the number of specials declared reusable by the Engineer in accordance with subclause PSDB 5.11, irrespective of the type or diameter of the special, delivered to the place or area specified in subclause PSDB 5.11.

The tendered rate shall be fully inclusive for loading the specials at the side of the trench, transporting to and off-loading at the location specified in PSDB 5.11, and carefully stacking separately according to the type, class and diameter of the specials.

(e) Dispose of pipes and specials unsuitable for reuse

(i) Pipes Unit: m

The unit of measurement shall be the linear metre of pipe declared by the Engineer to be unsuitable for reuse and disposed of by the Contractor in accordance with the requirements of PSDB 5.11.6. Separate items will be scheduled for different diameters of pipe.

The tendered rates shall be fully inclusive for loading the pipes at the side of the trench, transporting to and off-loading at the spoil site and dealing with them as specified in PSDB 5.11.6.

(ii) Specials Unit: number

The unit of measurement shall be the number of specials, irrespective of the type or diameter of the special, declared by the Engineer to be unsuitable for reuse and disposed of by the Contractor in accordance with the requirements of PSDB 5.11.6.

The tendered rate shall include for loading the specials at the side of the trench transporting them to and off-loading them at the spoil site and dealing with them as specified in PSDB 5.11.6.

(f) Backfill and compact trench Unit: m³

The unit of measurement shall be the cubic metre of compacted fill, measured tight according to the authorised dimensions of the trench.

The tendered rate shall be fully inclusive for placing excavated material in the trench and compacting in accordance with subclauses 5.6 and 5.7.

(g) Make up deficiency in backfill material Unit: m³

The unit of measurement shall be the cubic metre of backfill obtained from sources other than the trench excavated for the purposes of removing the pipeline in order to make up any deficiencies in backfill material resulting from the volume previously occupied by the pipeline.

Except that the volume shall be determined as the external volume of the pipes removed together with the external volume of all ancillary structures removed along the pipeline, measurement and payment shall be in accordance with 8.3.3.1 of SANS 1200 DB.

PSDB 8.3.9 Provision of temporary bridges for maintaining access to properties:

(a) Temporary pedestrian bridges Unit : number

The unit of measurement shall be the number of temporary pedestrian bridges actually provided in accordance with the Specifications.

The tendered rates shall include full compensation for the supply, first installation, maintenance and final dismantling and removal of the temporary access bridges when no longer required, as specified in Subclause PSDB 5.1.3.

PSDB 8.3.10 Moving of temporary bridges to and their re-erection in new positions:

(a) Temporary pedestrian bridges Unit : number

The unit of measurement shall be the number of times each temporary bridge is moved to and re-erected in an entirely new position, excluding its first erection in the position where it was originally installed. No payment shall be made without the Engineer's prior approval for the moving and re-erection of a temporary bridge.

The tendered rates shall include full compensation for taking down, transporting, handling, re-erecting and maintaining of the temporary bridges in the new positions."

PSD 8.3.14 Shore deep excavations (New Clause)

This item shall apply where shoring is required or ordered by the Engineer to protect existing structures and/or excavations in collapsing or non-cohesive materials.

The area of shoring measured for payment will be the actual area of excavation side shored, calculated from the perimeter of structure plus adequate working space and the height of shoring actually used. The maximum depth of shoring is estimated at 5m.

The rate shall cover the cost, of the design, supply, placing, maintenance and removal of the shoring system, complying with SANS 1200 D, Clause 5.1.1.2 and other support measures together with any cost that results from the inconvenience of working in the supported excavation and the cost of any risks inherent in the operation.

1. Shore Deep Excavations Unit : PC Sum

| | |
|-------------------|---|
| PSG | CONCRETE (STRUCTURAL) |
| PSG 3 | MATERIALS |
| PSG 3.2 | CEMENT |
| PSG 3.2.2 | <p>Alternative types of cement</p> <p><i>REPLACE THE CONTENTS OF THIS SUBCLAUSE WITH THE FOLLOWING:</i></p> <p>"Only ordinary Portland cement shall be used.</p> <p>If the Contractor wishes to use any other type of cement, he shall obtain the Engineer's prior written approval (see 8.1.3.2 and 8.1.3.3). The tendered rates, however, shall be based on the use of OPC only."</p> |
| PSG 3.2.3 | <p>Storage of cement</p> <p><i>ADD THE FOLLOWING:</i></p> <p>"Cement shall not be stored for longer than 12 weeks without the Engineer's permission."</p> |
| PSG 3.4 | AGGREGATES |
| PSG 3.4.3 | <p>Storage of aggregates</p> <p><i>ADD THE FOLLOWING:</i></p> <p>"When aggregates of different chloride content are stored on the site, their use in the various classes of concrete shall be strictly controlled."</p> <p><i>ADD THE FOLLOWING SUBCLAUSES:</i></p> |
| "PSG 3.9 | <p>WATERSTOPS</p> <p>PVC waterstops shall comply with the requirements of CKS 389.</p> |
| PSG 4 | PLANT |
| PSG 4.1 | GENERAL |
| | <i>ADD THE FOLLOWING SUBCLAUSE:</i> |
| "PSG 4.1.1 | <p>Minimum plant</p> <p>The Contractor shall have the following minimum plant available and in sound working order:</p> <ul style="list-style-type: none"> (a) Two concrete mixers, each of sufficient capacity to complete a section of the wall between horizontal construction joints within 4 hours and without interruption (b) Two weigh-batchers to supply the mixers (c) Four concrete vibrators, at least one of which shall be powered by an internal combustion engine |

- (d) One air compressor
- (e) Suitable and adequate plant to transport and raise concrete and other material and equipment from ground level to the top of the structure at all stages of construction
- (f) Elevated storage tanks of adequate capacity to ensure that sufficient water will be available before commencement of every major concrete-placing operation

If the Plant used for placing concrete for the structure is electrically or mechanically powered, the Contractor shall also provide some other approved, non-electrically-powered standby means for placing concrete at an adequate rate in the event of a power or mechanical failure of the main Plant.

When the Contractor elects to place a crane inside the walls of the structure during the construction period, he shall communicate with the Engineer in good time to ensure that the design and layout of the panels that form the roof slab and floor allow for such positioning of the crane. When sections of the roof and floor have to be redesigned to accommodate the crane, the redesign cost shall be borne by the Contractor."

PSG 4.5 FORMWORK

PSG 4.5.1 Design

ADD THE FOLLOWING:

"All formwork or scaffolding required for any part of the Works shall be designed by the Contractor, and before commencing with the erection of any formwork or scaffolding, the Contractor shall submit the methods he proposes to use to the Engineer for approval. The Engineer has the authority to order alterations to the design or the sizes of any part of the formwork or scaffolding. The Contractor shall check the safety and suitability of all such alterations. The fact that the Engineer has approved or altered any part of the formwork or scaffolding shall not be construed as relieving the Contractor of his responsibility with regard to the strength and stability of the formwork or scaffolding."

PSG 4.5.3 Ties

ADD THE FOLLOWING:

"No plugs, bolts, ties or clamps of any description used to hold the formwork will be allowed to project into or through the concrete unless expressly approved by the Engineer.

Only approved tie-rods consisting of solid rods (that remain embedded in the concrete) and with removable ends shall be used to hold the formwork of the walls. The removable tie-rod ends shall facilitate removal without damage to the concrete, and no permanently

embedded parts of such tie-rods shall have less than 50 mm of cover to the finished concrete surface.

Alternative tie methods other than above may be proposed, but must be qualified in the tender and will be subject to Engineer's approval.

The cavities/holes left in the concrete when the tie-rod components are removed shall be soundly caulked with an approved non-shrink repair mortar, and shall be neatly finished to a smooth surface uniform with that of the surrounding concrete.

The cost of supplying special tie-rods as well as the filling of cavities left by the tie-rod cones shall be included in the rates tendered for formwork under the appropriate pay items.

On no account shall formwork be secured to reinforcing bars."

PSG 5 CONSTRUCTION

PSG 5.1 REINFORCEMENT

PSG 5.1.2 Fixing

ADD THE FOLLOWING:

"The Engineer will inspect the reinforcing after it has been fixed in place, the formwork has been cleaned, cover blocks have been positioned, and before concreting commences.

Welding of reinforcing steel will not be permitted."

PSG 5.1.3 Cover

ADD THE FOLLOWING:

"The distance between pipes in the concrete and the reinforcing steel shall nowhere be less than

(a) 40 mm or

(b) 5 mm plus the maximum size of the coarse aggregate, whichever is the largest.

PSG 5.2 FORMWORK

PSG 5.2.1 Classification of finishes

(c) Special

ADD THE FOLLOWING:

"This finish is obtained by first giving the surface a smooth finish with the joints between formwork panels forming an approved regular pattern suitable for the appearance of the structure. All projections shall then be removed, irregularities repaired and the surface rubbed or otherwise treated until it is smooth with an even texture, appearance and colour.

If the finish of exposed surfaces does not comply with the requirements for uniformity of the texture and appearance, the Contractor shall, when instructed to do so by the Engineer, rub down the exposed surfaces of the entire structure or any part thereof as specified below, entirely at his own cost. All repairs must be completed before the rubbing commences.

The surface shall be saturated with water for at least one hour. The initial rubbing of the face shall be carried out with a medium coarse carborundum stone together with a small amount of mortar of the same cement/sand ratio as the concrete being repaired. Rubbing shall continue until all form marks, projections and irregularities have been removed and a uniform surface has been obtained. The paste produced by the rubbing shall be kept in place. The final rubbing shall be carried out with a fine carborundum stone and water. This rubbing shall continue until the entire surface has a smooth, even texture and is uniform in colour. The surface shall subsequently be washed with a brush to remove surplus paste and powder."

PSG 5.2.5 Removal of formwork

ADD THE FOLLOWING SUBCLAUSE:

"PSG 5.2.5.7 The Contractor shall make provision for the continued support of beams and slabs while the formwork is being removed and/or for back propping of beams and slabs."

PSG 5.3 HOLES, CHASES AND FIXING BLOCKS

ADD THE FOLLOWING:

"Cover blocks for reinforcing and fixtures may be placed into the concrete provided that neither the strength nor any other desirable characteristic (such as the appearance) of the concrete section is affected or impaired in the opinion of the Engineer."

PSG 5.4 PIPES AND CONDUITS

ADD THE FOLLOWING:

"All pipes passing through concrete floors, walls or slabs shall be cast into a concrete member simultaneously with the casting of the member. Openings for pipes shall only be left in concrete members when so directed by the Engineer or when shown on the Drawings. Pipes shall be installed in such openings according to the details shown on the Drawings."

If watertightness is a requirement where pipes are cast into walls, floors and slabs, the Contractor shall ensure watertightness where smooth-surfaced pipes are used by using an approved method such as tape wrapping the pipes prior to casting in. The cost of such method will be deemed to be included in the rates tendered for item PSG 8.13."

PSG 5.5 CONCRETE

PSG 5.5.1 Quality

PSG 5.5.1.5 Durability

The exposure conditions of the concrete are classified as "severe".

PSG 5.5.1.7 Strength concrete

ADD THE FOLLOWING:

"The concrete mixes shall be designed by the Portland Cement Institute or a similar approved laboratory."

The minimum ordinary Portland cement content for strength concrete with a 28 day characteristic compressive strength of 25 MPa and higher shall be 325 kg/m³. The maximum ordinary Portland cement content shall be 400 kg/m³ in reinforced concrete and 500 kg/m³ in prestressed concrete."

The maximum water:cement ratio shall be 0,55 for ordinary Portland cement."

Mix designs to be submitted to the Engineer for approval."

PSG 5.5.3 Mixing

PSG 5.5.3.2 Ready-mixed concrete

ADD THE FOLLOWING:

"Ready-mixed concrete may be used on the Site. The Contractor shall take samples for testing from every load delivered to the Site."

PSG 5.5.5

Placing

ADD THE FOLLOWING:

"Concreting of the wall between horizontal construction joints shall be carried out in both directions from a point on the wall in order to close the gap with fresh concrete."

PSG 5.5.7

Construction joints

ADD THE FOLLOWING:

"Horizontal construction joints are permitted in structure walls in positions indicated on the Drawings or approved by the Engineer. Vertical construction joints in the walls are subject to the written approval of the Engineer and the cost of all such vertical or horizontal construction joints will be deemed to be included in the rates for cast-in-situ concrete. This also applies to the preparation of concrete to form construction joints in flume walls as specified on the Drawings.

The construction joints in water-retaining structures shall be made strictly in accordance with the details shown on the Drawings. The joints between screeds and concrete floors shall be regarded as construction joints and the surface of the floor shall be prepared as described for construction joints.

Should the Contractor's method of construction necessitate the placing of a construction or other joint in a position not shown on the Drawings, such method of construction and position of the joint shall be approved by the Engineer in writing. The cost of such joint shall be included in the tendered rates and shall include scabbling of the concrete where steel reinforcement is continuous.

The walls shall be cast in lifts of a height that permits each lift to be poured without interruption in one continuous operation during normal working hours.

It is the Contractor's responsibility to ensure that construction joints are watertight. The Contractor's proposed method for ensuring the watertightness of such joints shall be submitted to the Engineer for his approval.

For construction joints at kickers (Joint F) all additional costs for concrete, preparation, etc will be deemed to be included in the rates tendered for concrete in walls or sides and kicker joints or construction joints will not be measured separately."

PSG 5.5.8

Curing and protection

ADD THE FOLLOWING:

"The curing methods of retaining the formwork in place or covering with a waterproof membrane are strongly recommended. Concrete will not be paid for unless properly cured and proof of curing is continuously visible on site."

PSG 5.5.10

Concrete surfaces

ADD THE FOLLOWING SUBCLAUSES:

"5.5.10.4

Where the surfaces of the concrete are to be additionally hardened or protected, the positions of such surfaces and the method to be used will be shown on the Drawings and will be scheduled. Materials or products with a ferrous content will not be allowed."

ADD THE FOLLOWING SUBCLAUSES:

PSG 5.5.16 Applied loads

No crushed-stone covering or any other loads shall be placed on the roof of the structure before the concrete has attained its design strength, unless approved supports are provided.

PSG 5.5.17 Soilcrete

Where soilcrete is specified for filling under floor slabs, the soilcrete shall comply with the requirements of subclause PSDB 3.5(d) of section 1200 DB as amended and shall be placed as specified in the subclause."

PSG 6 TOLERANCES

PSG 6.2 PERMISSIBLE DEVIATIONS

PSG 6.2.3 Specified permissible deviations

ADD THE FOLLOWING:

"Degree-of-accuracy II is applicable.

Every specified permissible deviation is binding in itself. The cumulative effect of permissible deviations will not be considered. The maximum permissible vertical deviation is subject to the other permissible deviations."

REPLACE SUBCLAUSE 6.2.3(d)(5) WITH THE FOLLOWING:

"Vertically, per metre of height
subject to a maximum of"

| Permissible deviation | | |
|-----------------------|----|----|
| Degree of accuracy | | |
| III | II | I |
| mm | mm | mm |
| 5 | 3 | 2 |
| 50 | 30 | 10 |

"

PSG 7 TESTS

PSG 7.1 FACILITIES AND FREQUENCY OF SAMPLING

PSG 7.1.1 Facilities

ADD THE FOLLOWING:

"The Contractor shall provide sufficient storage capacity for the concrete cubes and shall arrange to have them tested by an approved laboratory.

The cost of all testing, including the cost of sampling, storage and transport of samples shall be included in the rates tendered for concrete work."

PSG 7.3 ACCEPTANCE CRITERIA FOR STRENGTH CONCRETE

ADD THE FOLLOWING:

"Test results obtained from the supplier of ready-mixed concrete will not be accepted for evaluation in terms of subclause 7.3, but samples for testing shall be taken of such concrete at the point of placing."

ADD THE FOLLOWING SUBCLAUSE:

"PSG 7.3.6 Testing for watertightness

Water for testing shall be provided by the Contractor and he shall be responsible for providing all necessary equipment that may be required for filling the structures.

The structure shall be filled with water at a uniform rate not exceeding 2,0 m in 24 hours until the top water level has been reached. The water level will then be carefully noted and recorded by the Engineer in relation to a fixed bench mark, and shall be maintained by the addition of further water for a stabilizing period to permit complete absorption of water by the concrete.

The stabilizing period may be 7 days for a maximum design-crack width of 0,1 mm or 21 days for 0,2 mm or greater. After the stabilizing period, the level of the liquid surface shall be recorded at 24-hour intervals for a test period of 7 days. During this 7-day test period the total permissible drop in level, after allowing for evaporation, shall not exceed 1/500th of the average water depth of the full tank, or 10 mm.

The evaporation shall be measured by the mean drop in level caused by the evaporation of the water in three flat containers floating in the water being recorded.

In the event of appreciable leakage being evident at any stage of the filling or testing or in the event of the Engineer considering the final degree of watertightness to be unsatisfactory, the Contractor when ordered by the Engineer shall discontinue such filling or testing and shall, at his own expense, take approved steps immediately to rectify the leakage, until a satisfactory test is obtained, which shall prove to the Engineer that a sufficient degree of watertightness has been obtained.

The costs of emptying a water-retaining structure which cannot be drained shall be borne by the Contractor. The water shall be discharged in a manner approved by the Engineer and shall be such that the Employer can utilise the water if he so desires.

The water shall not be used as a medium for additives to effect remedial work or to stop leaks.

The costs of retesting the structure for watertightness shall be borne by the Contractor."

PSG 8 MEASUREMENT AND PAYMENT

PSG 8.1 MEASUREMENT AND RATES

PSG 8.1.1 Formwork

DELETE "or splays over 20 mm x 20 mm" FROM THE FIRST LINE OF PARAGRAPH 8.1.1.2.

ADD THE FOLLOWING TO PARAGRAPH 8.1.1.2:

"Splays up to and including 25 mm x 25 mm will not be measured separately and will be deemed to be included in the formwork costs."

ADD THE FOLLOWING PARAGRAPHS:

- "8.1.1.7 For construction joints at kickers, all additional costs for formwork to edges up to 300 mm high will be deemed to be included in the rates tendered for vertical formwork to sides of walls and will not be measured separately in narrow widths.
- 8.1.1.8 No formwork will be measured to edges of blinding layers under structures, and the cost thereof (if needed) will be deemed to be included in the rates tendered for concrete in blinding layers.
- 8.1.1.9 Back-shuttering or formwork to top revealed surfaces of sloping or conical formwork will only be measured to surfaces of over 40° and up to 85° to the horizontal.
- 8.1.1.10 Formwork to horizontal surfaces in pump stations, valve chambers, manholes or sumps can either be removed through the manhole cover opening or the Contractor may use permanent formwork at his own cost as no claims in this regard will be considered."

PSG 8.1.2 Reinforcement

REPLACE THE CONTENTS OF THIS SUBCLAUSE WITH THE FOLLOWING:

"The unit of measurement for steel bars shall be the ton of reinforcement in place, in accordance with the Drawings or as authorised by the Engineer.

The unit of measurement for welded steel fabric shall be the kilogram of fabric reinforcement in place, and the quantity shall be calculated from the net area covered by the mesh, excluding overlaps.

Clips, ties, separators, stools and other steel used for positioning reinforcement will not be measured, unless these are shown on the bending schedules.

The tendered rate shall include full compensation for the supply, delivery, cutting, bending, welding, placing and fixing of the steel reinforcement, including all tying wire, stools, supports and waste."

PSG 8.1.3 Concrete

Delete ", or the plan size of the excavation where additional excavation is provided to facilitate erection of forms" from the second line of paragraph 8.1.3.1(c).

PSG 8.4 SCHEDULED CONCRETE ITEMS

PSG 8.4.3 Strength concrete

ADD THE FOLLOWING AFTER THE LAST SENTENCE:

"In the case of structural floor screeds, the unit of measurement shall be the square metre and the average thickness and proportions will be stated."

REPLACE "Unit: m³" WITH "Unit: m³, m²"

PSG 8.5 JOINTS

REPLACE "Unit: m" with "Unit: m or m²".

ADD THE FOLLOWING ITEMS:

"PSG 8.9 MISCELLANEOUS WORK OTHER THAN METALWORK:

(a) Description of miscellaneous work to be done..... Unit: as scheduled

Separate items will be scheduled for each type of miscellaneous work.

The tendered rates shall include full compensation for providing all labour, materials and equipment required to carry out the work, for all preparatory work, for constructing the work scheduled in a workmanlike manner and for finishing off and cleaning up when the work has been completed.

PSG 8.10

**CORE DRILL OR BREAK OUT EXISTING REINFORCED
CONCRETE, INSTALL NEW PIPE WITH PUDDLE FLANGE
IN OPENINGS AND REPAIR CONCRETE, USING SLOW SET
WET-TO-DRY EPOXY AND NON-SHRINK GROUT FOR PIPES
UP TO 200 mm NOMINAL BORE AS PER DRAWING NO**

- (a) Through (description and thickness of structure element) Unit: number
- (b) Etc through other thicknesses and structure elements

The unit of measurement shall be the number of each size category of pipe installed and concrete wall repaired.

The tendered rates shall include full compensation for making the opening and installing the pipe watertight in the position shown on the drawings for cutting and bending the existing reinforcement, for supplying and installing new trimmer bars, cleaning, preparing surfaces and supply and installation of sealer strips, slow set curing/repairing materials, shuttering, etc and for splitting or cutting the formwork where required, for disposal of debris and for all else necessary to carry out the work scheduled."

PSG 8.11

TESTING FOR WATERTIGHTNESS:

- (a) (Structure stated) Unit: sum
- (b) Etc for other structures

The unit of measurement shall be the number of each structure successfully passing the specified watertightness tests to the satisfaction of the Engineer.

The sums tendered shall include full compensation for the provision of all labour, plant and materials necessary for carrying out the test for watertightness as specified.

PSG 8.12

SCREEDS

- (a) Floor screeds (1:3) with falls including V-joints to form panels and a smooth steel-trowelled finish/power float finish to top:
 - (i) Description of application and thickness Unit: m²
 - (ii) Etc for other applications and thicknesses

The unit of measurement shall be the square metre of screeds constructed.

The tendered rate shall include full compensation for constructing the screeds as specified including supplying of all materials, preparing the concrete surface to receive the screeds and for all else that may be necessary to complete the work.

PSG 8.13

CASTING IN PIPES WITH OR WITHOUT PUDDLE FLANGES

(a) Up to 300 mm nominal bore:

(i) Through (description and thickness of structural elements)..... Unit: number

(b) Over 300 mm up to 600 mm nominal bore:

(i) Through (description and thickness of structural elements)..... Unit: number

(c) Etc for other nominal bores in increments of 300 mm

The unit of measurement shall be the number of each size of pipe installed.

The tendered rates shall include full compensation for installing the pipe where new pipes are used (with or without a puddle flange) in the exact position as shown on the Drawings, for splitting or cutting the formwork where required, for ensuring watertightness where required and for all additional costs required to install the pipes specified or shown on the Drawings.

New pipes shall be measured under the items of the relevant section of the specifications.

PSLB BEDDING (PIPES)

PSLB 3 MATERIALS

PSLB 3.1 SELECTED GRANULAR MATERIAL

All bedding used for the cradle beneath and surrounding the pipes shall comply with the following requirements:

| GRADING ANALYSIS RANGE | |
|------------------------|--------------------|
| SIEVE SIZE (mm) | PERCENTAGE PASSING |
| 6,7 | 98 to 100 |
| 4,76 | 85 to 100 |
| 2,36 | 55 to 95 |
| 1,18 | 30 to 75 |
| 0,60 | 20 to 50 |
| 0,425 | 16 to 38 |
| 0,30 | 13 to 27 |
| 0,15 | 5 to 18 |
| 0,075 | 0 to 12 |

The material shall be free of organic matter and shall have a compatibility factor of not more than 0.4. The material shall be classified as silty to fine sand having a stiffness ratio of not less than 5,0 MPa. Furthermore, the materials shall, preferably, be obtained from river transported deposits since it is preferable that the larger grains (3,0 to 4,8 mm in size) be rounded and not sharp and angular.

The Contractor will be required to carry out his/her own quality control testing of the material to ensure that it meets the bedding sand requirements and complies with this specification at all times. At least one grading analysis shall be carried out for every 100 linear metres of bedding placed. The results of these tests shall be forwarded to the Engineer within 24 hours of completion of the test. Should the material not comply with the specification, the Contractor shall remove and replace it with approved material at his/her own cost.

Depending on the actual material supplied by the Contractor, the moisture content may be critical to enable satisfactory placing and compaction and the Contractor will be deemed to have allowed in his tendered rate for any and all adjustments required to the moisture content of the bedding material at all times.

REPLACE THE CONTENTS OF THIS SUBCLAUSE WITH THE FOLLOWING:

"Selected granular material shall have a PI not exceeding 6 and shall be free from sharp-edged particles exceeding 19 mm."

PSLB 3.2 SELECTED FILL MATERIAL

ADD THE FOLLOWING:

"Not required. All material up to the underside of main fill shall be selected granular as specified in PSLB 3.1"

PSLB 3.3 BEDDING

ADD THE FOLLOWING:

"uPVC and HDPE pipes are deemed to be flexible pipes for the purposes of this subclause."

PSLB 3.4 SELECTION

PSLB 3.4.1 Suitable material available from trench excavation

REPLACE THE WORDS "(but is not required)" IN THE FIFTH LINE WITH THE WORDS "(at his own cost)".

PSLB 5 CONSTRUCTION

PSLB 5.1 GENERAL

PSLB 5.1.2 Details of Bedding

DELETE AND REPLACE WITH:

Pipes shall be bedded and protected in accordance with the details shown on the drawings.

PSLB 5.1.2 Details of Bedding)

ADD THE FOLLOWING TO SUB-CLAUSE 5.1.2 OF SANS 1200 LB:

Where indicated on the drawings, or as otherwise indicated by the Engineer, a 200 mm thick layer of 19 mm stone shall be placed beneath the bedding layer to act as a drainage channel for excessive groundwater. This layer shall be wrapped in bidim and provided with outlet pipes if and where indicated.

PSLB 5.1.4 Compacting

DELETE THE SECOND LINE AND SUBSTITUTE:

top of the pipeline) shall be 93% mod AASHTO.

ADD TO SUB-CLAUSE 5.1.4:

"Steps will have to be taken by the Contractor to ensure that flexible pipes do not deform excessively in cross-section during and after construction and backfilling operations. The maximum deflection which will be acceptable at any stage during or after construction is 2% of the pipe diameter horizontally or vertically. The Contractor will be required to provide the necessary apparatus and to monitor deflection during construction.

Pipe deformations will only be maintained within the specified tolerances by correct backfilling practice. No heavy compaction equipment will be permitted for compaction of any pipe bedding, only pneumatic or hand rammers being acceptable. To this end, and to achieve the 93% compaction specified, it is required that the bedding material be brought up evenly on either side of the pipe. The use of complete saturation of the material as a method of achieving the specified compaction may, subject to the Engineer's approval, be used. However, in this regard, Tenderers are advised that the presence of excessive quantities of water in the pipe trench could lead to flotation of the pipe.

Prior to the commencement of pipe laying the Contractor will be required to submit, to the Engineer, his proposed methods of placing, and compacting methods which he proposes to implement in order to ensure compliance with the specification."

PSLB 5.1.5 Testing (New Sub-Clause)

Flexible and flanged joints shall be left exposed with a minimum of 300 mm clearance around the bottom of the pipe during hydraulic pressure testing of the pipe to facilitate inspection.

PSLB 5.2.5 Stone Bedding (New Sub-Clause)

In areas where waterlogged conditions exist or where ordered by the Engineer, special drains consisting of a 200 mm thickness (See PSLB 5.1.2 c)) of single sized stone with a geofabric filter surround ("Bidim" Grade A4 or similar approved) extending the full width of the trench shall be provided below the bedding to the pipes. The excavation for these drains will be measured in cubic metres at the contract rate applying to unsuitable excavation below the bottom of the trench. The stone filling will be paid for per cubic metre and the geofabric filter will be paid for per square metre. All measurements in this connection will be to a width equal to the base widths and depths ordered.

PSLB 5.3 Placing and Compacting Flexible Pipes

PSLB 5.3 (a) Bedding Cradle

DELETE THE SUB-CLAUSE AND SUBSTITUTE THE FOLLOWING:

"The pipes shall be bedded on a minimum 100mm thick layer of compacted granular bedding material on which a 50 mm thick layer of uncompacted granular bedding material has been placed and spread. Loose granular bedding material lying next to the pipe shall be placed into the haunch area and compacted with suitable hand tools (covered with rubber to prevent damage to the pipe coating), and additional selected granular material shall be added and compacted in 150 mm thick layers up to the mid point of the pipe diameter in the vertical plane. The remainder of the bedding i.e. the selected fill blanket, shall be placed in layers up the sides of the pipe, each layer being compacted until a level of 300 mm above the crown of the pipe is reached."

PSLB 5.3(b) Selected Fill Blanket

DELETE "200 MM" FROM TITLE.

PSLB 6 TOLERANCES

PSLB 6.1 Moisture Content and Density

ADD TO THE SUB-CLAUSE:

"The permissible deviations applicable are to be those for Degree of Accuracy II class of work."

PSLB 8 MEASUREMENT AND PAYMENT

PSLB 8.1 PRINCIPLES

PSLB 8.1.5 Disposal of displaced material

REPLACE THE CONTENTS OF THIS SUBCLAUSE WITH THE FOLLOWING:

"Material displaced by the pipeline and by imported material from sources other than trench excavation, shall be disposed of at an approved site furnished by the Contractor. No haulage is payable for such material."

PSLB 8.1.6 Free-haul

DELETE THE WORDS "of 0,5 km" IN THE FIRST LINE OF THIS SUBCLAUSE.

PSLB 8.2 SCHEDULED ITEMS

PSLB 8.2.1 Supply only of bedding by importation:

ADD THE FOLLOWING TO THE SUB-CLAUSE:

The unit of measurement shall be the cubic metre of bedding obtained from sources other than the trench excavated for the purposes of laying the pipeline, in order to make up any deficiencies in bedding material. The consultative cost with the local authority and royalties will be borne by the contractor and should be included in the rates for sourcing bedding material from borrow pits.

PSLB 8.2.2 Supply only of bedding by importation

PSLB 8.2.2.2 From borrow pits

DELETE THE WORDS IN BRACKETS IN THE FIRST FOUR LINES.

ADD THE FOLLOWING:

"The opening up of borrow pits and the removal of overburden are paid for under item 8.3.4 of SANS 1200 D."

ADD THE FOLLOWING ITEM:

"PSLB 8.2.6 Extra over items 8.2.1 and 8.2.2 for bedding stabilized with 5% cement

Unit: m³

The tendered rate shall include full compensation for selecting, mixing, backfilling and compacting the stabilized material to 90% of modified AASHTO density."

PSLD SEWERS

PSLD 3 MATERIALS

PSLD 3.5 MANHOLES, CHAMBERS, ETC

PSLD 3.5.2 Precast concrete sections

ADD THE FOLLOWING:

Sectional spun-concrete cylinders shall be manufactured from dolomitic aggregate.

PSLD 3.6 MARKER POSTS

REPLACE THE WORDS "Project Specification" WITH "Drawings".

PSLD 8 MEASUREMENT AND PAYMENT

PSLD 8.2 SCHEDULED ITEMS

PSLD 8.2.10 ERF Connection as shown on Dwg No 7515-S107

Unit: number

Connection from ERF to sewer mainline with 110mm dia uPVC Class 34 pipe this includes all the bends, rodding eye, reducers from 110mm to the size of the main pipe

The tendered sum shall include full compensation for excavation, making an opening in the existing manhole, installing new pipes in the new opening, for breaking out and modifying the channelisation inside the manhole to suit the new pipe layout, ensuring the watertightness of the new connection, supplying all the necessary materials, removing surplus material and debris, all labour and equipment required to make the connection, and liaison with the local authorities."

PSLD 8.2.11 Connection to existing sewer at

REPLACE THIS ITEM WITH THE FOLLOWING:

"PSLD 8.2.11 Connection to existing sewer

Unit : Sum

The tendered sum shall include full compensation for excavation, making an opening in the existing manhole, installing new pipes in the new opening, for breaking out and modifying the channelisation inside the manhole to suit the new pipe layout, ensuring the watertightness of the new connection, supplying all the necessary materials, removing surplus material and debris, all labour and equipment required to make the connection, and liaison with the local authorities."

ADD THE FOLLOWING ITEM:

**"PSLD 8.2.13 Breaking into existing sewer and building
a new manhole**

Unit : number

The tendered rate shall include full compensation for excavation, building a new manhole over the sewer, breaking into the existing sewer, building the channelisation under wet conditions, ensuring the watertightness of the new connection, supplying all the necessary materials, removing surplus material, all labour and equipment required to make the connection, and liaison with the local authorities."

"PSLD 8.2.18 Dislodging blocked manholes and pipes

Prov .Sum

The tendered rate shall include full compensation for using equipment for removing debris, sewerage and any items in the sewer system including pipes and manholes.

The unit of measurement shall be the cubic metre. measured in accordance with Sub-clause 8.2 of SABS 1200D, of surplus and/or unsuitable material disposed of, on the instruction of the Engineer, at a spoil site or spoil sites provided by the Contractor.

The tendered rate shall include full compensation for the additional cost of providing a spoil site or other means of disposing of surplus spoil material, for transporting the material regardless of the distance involved, for acceptance charges for such material and for all other incidental costs to dispose of the spoil material."



METSIMAHOLO LOCAL MUNICIPALITY

RE-ADVERT: APPOINTMENT OF A 7 CE/GB OR HIGHER CIDB REGISTERED CONTRACTOR FOR THE CONSTRUCTION OF TOILETS AND SEWER NETWORK REPAIR IN GORTIN PHASE 1.

BID NO.: 23/2023/24

PARTICULAR SPECIFICATIONS

PD

BUILDING WORK

PARTICULAR SPECIFICATIONS

PD BUILDING WORK

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PD 01 SCOPE

This is a Particular Specification and covers the various construction activities associated with the erection of buildings which form part of this Contract.

Building work shall be carried out in accordance with the National Building Regulations, SANS 0400, the applicable clauses of the SANS Standardised Specifications and the information contained in this Specification.

Work appurtenant to the erection of buildings such as earthworks, concrete work, structural steelwork, etc shall be carried out as specified in the appropriate Standardised Specifications and will be measured and paid for under those Specifications.

PD 02 BRICKWORK, PLASTER WORK AND FLOOR SCREEDS

PD 02.1 MATERIALS

(a) Bricks

Bricks shall comply with SANS 227 and shall be of the class scheduled or shown on the Drawings.

Satisfactory proof of the load-bearing capacity of the bricks offered shall be submitted before deliveries are made to the Site.

Air bricks shall be well-burnt terracotta and shall be free from cracks and blemishes and lined with copper mosquito gauze.

Three samples of each type of brick shall be submitted to the Engineer for approval. All subsequent deliveries shall be of a standard equal to or better than that of the approved samples.

(b) Cement

Cement shall comply with the requirements of SANS 471 and shall be stored under cover. The use of Portland Blast-furnace Cement (PBFC) which complies with the requirements of SANS 626 will only be allowed if approved by the Engineer.

(c) Aggregate

Fine aggregate shall consist of natural sand, or crushed rock or gravel, and shall be hard, clean and free from adherent coatings or other deleterious matter. Sand for plaster and mortar shall comply with the requirements of SANS 1090, whereas the aggregates for normal and granolithic floor screeds shall comply with the requirements of BS 1199 and BS 1201 respectively.

(d) Water

Water shall be clean and free from clay, silt, oil, acid, alkali, organic or other matter which would impair the required strength and durability of the mortar, plaster or floor screed.

(e) Wall ties

Wall ties shall be of the galvanised, crimped, single-wire type, 3,5 mm in diameter, and shall comply with the requirements of SANS 28.

(f) Damp-proof sheeting

Damp-proof sheeting shall comply with SANS 248, type FV for fibre felt, or SANS 952, type B for embossed polyethylene sheeting.

PD 02.2

CONSTRUCTION OF BRICKWORK

(a) Cement mortar

Cement mortar shall, unless otherwise specified, consist of one part Portland cement to four parts sand (1:4) by volume for normal brickwork and one part Portland cement to three parts sand (1:3) by volume for reinforced brickwork. The ingredients for cement mortar shall be measured in proper gauge boxes on a boarded platform and thoroughly mixed. Alternatively, mixing may be by means of an approved mechanical batch mixer. Only when the dry ingredients have been thoroughly mixed and a mixture of uniform colour has been obtained may the water be added in sufficient quantity to obtain mortar with the required consistency.

Cement mortar shall be used within two hours of adding water to the mix and shall not be used after two hours or if it has begun to set. Mortar shall be turned over frequently to prevent it from setting until it is used.

(b) Brickwork

Dimensions of all the brickwork shall be set out and built as shown on the Drawings. Bricks shall be kept wet before laying and the top of brickwork shall be wetted before any further bricks are laid. Bricks shall be well buttered with mortar before being laid and all joints shall be thoroughly flushed up as the work proceeds. All joints to face brickwork shall be neatly made and key-drawn with a 6 mm key.

Brickwork shall be carried up in a uniform manner with no portion being raised more than 1 m above an adjacent portion. All perpends, quoins, etc, shall be kept strictly true and square and the whole properly bonded together.

Brickwork shall be built in stretcher bond or english bond as shown on the Drawings, and bats shall not be used except where required for the bond. All joints shall be 10 mm wide and four courses shall measure 340 mm.

Brickwork for cavity walls and solid walls built in stretcher bond shall be tied with wall ties placed not more than one metre apart in every third course, and shall be

staggered vertically. At openings, the ties shall be positioned not more than 300 mm apart along the periphery of the opening and 150 mm from the opening.

Face brickwork shall be kept perfectly clean and rubbing down of the brickwork shall not be allowed. Scaffold boards shall be turned back during heavy rain to avoid splashing. Soiled brickwork shall be cleaned at the Contractor's expense, and the cleaning method shall be approved by the Engineer.

(c) Reinforced brickwork

Brickwork over door and window openings shall be reinforced with steel rods, welded or expanded mesh, etc. Reinforcement shall be placed in each course of brickwork for a minimum of four (4) courses or as shown on the Drawings. Reinforced brickwork shall continue at least 300 mm on each side of the openings.

Brick lintels shall be built upon rigid temporary supports left in position for not less than seven (7) days after brick-laying. Prestressed concrete lintels may be used where approved by the Engineer.

(d) Key for plaster

Joints of all brickwork receiving plaster shall be raked out, or the brick surfaces shall otherwise be prepared with an acrylic slurry or any other approved bonding agent.

(e) Damp-proofing

A damp-proof course shall be laid over the full width of all the walls at a minimum height of 150 mm above the final ground level or wherever else it may be required, and it shall be lapped for at least 150 mm at angles and joints. A damp-proof course shall also be laid and stepped up under all external sills.

(f) General

Rough and fair cutting shall be performed as required, and the brickwork shall be fitted around any steel work. Face brickwork shall be carefully cut and fitted to suit fittings.

Chases shall be left or formed for edges of concrete floors, staircases, etc. Chases shall also be provided wherever they may be required for pipes, conduits, switch boxes, distribution boards, and the like. Joints shall be raked out for flashings.

PD 02.3 **PLASTER WORK**

(a) Plaster coats

A plastered finish shall consist of a single coat, comprising one application of a 1:6 cement sand mixture with a wood or steel-float finish.

(b) Thickness

The total thickness of the plaster finish shall be 13 mm minimum and 20 mm maximum.

(c) Workmanship

All plaster work shall be finished smooth and ready to receive paint. Plaster shall be flush with the faces of all switch and plug boxes, the interiors of which shall be kept free from plaster. Plastered surfaces shall be plumb and jambs and reveals shall be formed square.

The plasterer shall cut out and make good all cracks, blisters and other defects and leave the plaster work, on completion, in a state which is acceptable to the Engineer.

PD 02.4 **FLOOR SCREEDS**

Floor screeds shall have a mix proportion by mass consisting of one (1) part Portland cement and three (3) parts (1:3) fine aggregate. A minimum amount of water is to be used, but it shall be sufficient to allow adequate compaction.

Screeds shall be laid on clean hardened bases in panels not exceeding 14 m² and shall be steel-trowelled to a true and smooth finish. In monolithic construction, the panels shall not exceed 30 m². Joints in screeds shall coincide as nearly as possible with joints in the bases. The thickness of screeds shall be as shown on the drawings or as directed by the Engineer.

The entire screed surface shall be free from loose or raised particles of aggregate, trowel marks or any irregularities, humps or depressions exceeding 5 mm when measured from a 3 m long straight edge.

Screeds shall be cured for three (3) to seven (7) days as may be directed by the Engineer, and shall be protected from damage.

No moisture-sensitive floor finish shall be laid on screeds unless a reliable moisture test shows that the screed is sufficiently dry to receive the covering.

PD 03 **DOORS AND WINDOWS**

PD 03.1 **MATERIALS**

(a) General

All steel and iron work shall be delivered clean and free from rust, pitting or other defects. Shop primings shall be applied before delivery and shall consist of a coat of red oxide paint, or any other approved anti-rust paint on all surfaces.

Unless otherwise specified, all materials shall conform at least to the appropriate SANS or BS standards where such standards apply to ironmongery, or steel, cast iron and any other related materials.

(b) Pressed steel door frames

Pressed-steel door frames shall comply with SANS 1129 and shall be manufactured from 1,6 mm thick mild-steel sheeting, pressed to the required shapes, properly mitred, welded and reinforced, with all welding neatly cleaned off.

Frames shall be of the widths required to suit the thickness of the walls into which they are built and shall be fitted with suitable tie bars and braces at the bottom. Three lugs to be built into the brickwork shall be provided on each jamb.

Rebates in frames and transoms for doors shall be of the widths required to suit the thicknesses of the doors and shall be fitted with a pair of approved steel butt hinges set flush into recesses in the frames. 4,5 mm thick reinforcing plates shall be welded to the backs of the frames at hinge positions.

Heads of frames over double doors shall be drilled where required to form keeps for bolts and shall be fitted with one rubber buffer for each leaf of the door.

Frames for single doors shall be fitted with approved chromium striking plates and an adjustable striking-plate keeper boxed in at the back of the frame by a welded-on sheet-metal box. The frames shall be fitted with a minimum of two rubber buffers.

Frames shall be protected against twisting and damage during transit and erection.

(c) Pressed-steel doors

Pressed-steel doors shall be manufactured from 1,6 mm thick steel plate. The doors shall be of standard design, pressed to shape with 40 mm reveals all round. The doors shall be strengthened with full-length vertical V-shaped or other approved sectional strengthening ribs projecting to the outer face. Two horizontal stiffening rails shall also be welded to the inner face of the doors.

A door shall be hung on a pair of 100 mm long steel butt hinges with loose pins. The leaves of the hinges shall be welded to both the door and the door frame, and a 1,6 mm thick steel plate shall be welded to the inner face of the door to protect the lock.

One leaf of double doors shall be fitted at the top and bottom with approved 150 mm cast brass barrel bolts in an approved manner and the other leaf shall be fitted with a lock, the striking plate of which shall be fixed to the first leaf.

Where indicated on the drawings, doors shall be fitted with louvred ventilation grills of approved design, backed with insect and vermin-proof gauze screening.

(d) Steel window frames

All steel window frames shall comply with SANS 727 and shall be of the types and sizes shown on the Drawings.

Standard industrial types of steel window frame shall be constructed from rolled mild-steel industrial sections, 35 mm wide by 3 mm thick, with opening sections constructed from standard residential sections, 25 mm wide by 3 mm thick, welded at angles and properly jointed at intersections.

Window frames shall be formed perfectly flat, truly square and properly jointed at all angles, and the opening portion shall fit properly on all faces and shall open and close freely.

Glazing bars shall be continuous with jointed intersections, the ends being neatly tenoned into the frame and securely welded in position.

Frames shall be fitted with standard fixing lugs.

Opening sections shall open as indicated on the drawings, and shall be fitted with steel hinges with brass pins. Pivots shall be fitted with bronze ring centres.

Side hung or top hung opening sections shall be fitted with brass handles and friction stays. Bottom hung sections shall be fitted with friction pivots and spring catches.

Weather bar drips shall be attached to the fixed frames for the complete width of the window at the head of outward opening sections.

Composite windows shall preferably be delivered to the Site fully assembled, complete with mullions and transoms.

(e) Door-locks and handles

All door-locks shall comply with the requirements of SANS 4 and shall be of approved manufacture and pattern. All locks shall be supplied with two keys. Keys shall be distinctly numbered with consecutive numbers and each key shall be stamped with the same number as that of the lock which it controls. No two locks in any one building may have the same key.

External doors shall be fitted with four-lever heavy-duty mortice locks, which shall be master-keyed.

All locks shall be properly installed and, after completion, striker plates shall be adjusted and the locks serviced.

Door-handles shall be of cast zinc of approved manufacture and pattern.

(f) Miscellaneous fittings

All retaining devices for doors and windows as well as fittings such as coat hooks, retaining hooks, etc shall be of solid brass. All fittings shall be secured by screws or set screws of the same material and finish as the fitting.

Fittings to be fixed to plastered walls, masonry or floors shall be fixed direct by means of patent plastic or fibre plugs fitted into drilled holes.

Door stops shall be provided at every door and shall be 40 mm diameter rubber stops.

PD 03.2

INSTALLATION OF DOORS AND WINDOWS

All built-in door and window frames shall be set straight, plumb and level, and shall operate to the satisfaction of the Engineer after fixing has been completed.

Fittings shall be either removed, or wrapped and protected from damage, until all rough trades have been completed.

PD 04 GLAZING

PD 04.1 MATERIALS

(a) Glass

Glass shall comply with the requirements of CKS 55. The quality of all window glass shall be such that surface deterioration will not develop after glazing.

All glass shall be free from bubbles, waviness, scratches, stains or other imperfections.

Unless otherwise specified, sheet glass for glazing shall be flat-drawn clear glass of ordinary glazing quality and of the thicknesses indicated below:

For panes not exceeding 0,75 m² in area3 mm

For panes exceeding 0,75 m² but not exceeding 1,5 m² in area4 mm

(b) Putty

All putty shall comply with the requirements of SANS 680.

Putty shall not be too hard or soft or caked when used, and shall dry evenly without crazing or cracking.

Defective putty shall be cut out and replaced by the Contractor at his own expense, and any broken glass shall also be so replaced and putty so repainted.

PD 04.2 GLAZING

Glass shall be cut in panes to suit all glazed openings with sufficient clearance all round to prevent cracking by expansion, contraction or vibration.

In all cases the glass shall be well bedded and back-puttied and installed as specified in SANS Code of Practice 0137.

All putty shall be carefully trimmed, cleaned off and neatly finished off straight with smooth surfaces and sharp mitres. A paint primer shall be applied as soon as the putty has dried out sufficiently to prevent shrinkage cracks from forming.

The entire glazing operation shall be cleaned before the premises are handed over for occupation.

PD 05 CARPENTRY AND JOINERY

PD 05.1 GENERAL

(a) Materials

All timber used for structural purposes shall be of merchantable grade and shall comply with the requirements of SANS 563 and SANS 1245. Structural timber shall be carefully selected and of the best quality, free from large or dead knots, shakes, waney edges or other defects. Purlins and bracing shall comply with the requirements of SANS 653. Finger-jointed structural timber shall comply with the requirements of SANS 096 and laminated timber with the requirements of SANS 1089.

Hardwoods and softwoods for joinery shall comply with SANS 1099 and SANS 1359 respectively and suitable species shall be used for the various purposes.

Unless otherwise specified, all materials shall conform to the appropriate SANS or BS Specification where such standards exist for nails, screws, bolts, adhesives, etc.

(b) Preservative treatment

All structural timber shall be given a preservative treatment suitable for the duty for which the timber is intended in accordance with SANS 05, and no untreated timber shall be used. The preservative treatment shall not impair the final finish. The timber shall be impregnated throughout. When surface coating is specified, the compounds applied on the surfaces of the timber shall form an unbroken film.

(c) Priming

The jointing surfaces of all joints exposed to the weather and built-in portions of frames shall be thickly primed except where adhesives are specified.

Carpentry and joinery items which are prepared for painting by the manufacturer, shall be knotted and primed before being dispatched to the Site.

Primed surfaces shall be touched up where necessary during the progress of the work or where site adjustments have been made.

PD 05.2 CARPENTRY WORK

(a) Scope of work

Carpentry work shall be carried out in a manner consistent with good workmanship and in compliance with the Drawings.

The carpenter shall perform all cutting away and making good in attendance upon all other trades and he shall provide and maintain temporary coverings required for the protection of any finished work that might be damaged if left unprotected during the progress of the work.

(b) Dimensions

Wrought timber shall be as sawn and shall be to the dimensions and within the tolerances specified in the relevant SANS Standard Specifications mentioned in Subclause PD 05.1(a).

(c) Jointing

Unless otherwise specified, all joints shall be secured by means of a suitable type and a sufficient number of approved connectors. All joints shall be carefully made in such a way that they will not impair the strength and stiffness of the beams or members.

(d) Timber roof construction

The plates, joists, rafters, purlins, bracing and other pieces used for the construction of the roof and trusses shall be of the dimensions, spacing and construction as shown on the Drawings.

All the joints in the framework shall be of the most appropriate type, accurately formed and adequately secured with fasteners as specified.

PD 05.3 JOINERY WORK

(a) Scope of work

Joinery work shall consist of the manufacture, delivery to the Site, and fixing in the buildings, of all joinery shown on the Drawings.

Except where a special finish is specified, the Contractor shall have all stairs, landings, doors, shelves and other joinery work cleaned and scrubbed down and shall leave all his work in a good order to the satisfaction of the Engineer.

(b) Dimensions

All wrought timber shall be sawn, planed, drilled or otherwise machined or worked to the correct sizes and shapes shown on the Drawings.

Reasonable tolerances shall be provided at all connections between joinery works and the building structure to compensate adequately for any irregularities, settlements or any other movements.

(c) Manufacture

The joiner shall perform all the necessary mortising, tenoning, grooving, matching, tonguing, housing, rebating and all the other works necessary for correct jointing. He shall also provide all metal plates, screws, nails and other fixings that may be necessary for doing the specified joinery work properly.

(d) Joints

Where joints are not specifically indicated, they shall be the recognised forms of joints for each position. The joints shall be so made as to comply with Part 2 of BS 1186.

(e) Doors and frames

Door frames, linings, panel doors, framed, ledged and braced doors, flush doors, sliding doors, etc shall be supplied or made by the joiner and shall be installed, fitted or hung as detailed on the Drawings.

All timber shall be wrought and prepared for oiling, staining, varnishing or painting.

(f) Skirtings, cornices, etc

Skirtings, cornices, etc shall not be installed until after the wall coverings have been applied, the flooring laid and ceilings installed, unless otherwise specified.

(g) In-situ joinery

In-situ joinery work shall not be executed until after all floor, wall and ceiling surfaces have been formed or constructed, unless otherwise instructed.

(h) Ceilings

Ceilings shall consist of plaster board or fibre-cement panels as shown on the Drawings and shall be nailed to the bracing or suspended from the roof structure. The panels shall be separated by exposed tees and insulated with a 50 mm thick fibreglass wool blanket where shown on the Drawings.

PD 06 ROOF SHEETING AND ACCESSORIES

Roof sheeting and accessories shall comply with and will be measured and paid for under SANS 1200 HC.

PD 07 ELECTRICAL WORK

The electrical wiring of buildings shall be carried out by registered and licensed electricians in accordance with the requirements of SANS 0142 and the regulations of the Employer.

The electrician shall work in close co-operation with the Contractor to ensure that all conduits, switchboards, plug boxes and switch boxes are installed in their correct position.

The work shall be carried out in accordance with the Drawings and to the satisfaction of the Engineer and the local authority.

PD 08 PLUMBING

PD 08.1 MATERIALS

(a) General

All materials shall be of the best quality and shall be approved by the Engineer before installation. Cracked, chipped, dented or faulty items or materials shall be replaced at the Contractor's expense. Glazed ceramic sanitary ware shall comply with the requirements of SANS 497 and all other materials shall comply with the standards as specified, scheduled or shown on the Drawings.

(b) Water closet (WC) suites

WC suites shall consist of a white glazed vitreous china closet with an S or P trap and seat lugs, a 14 litre low-level matching flat-bottomed flushing cistern placed and fixed on the closet, or a suspended enamelled cast-iron cistern with the flush pipe connected to the flushing rim of the closet with rubber cone joints, and a solid heavy-duty plastic seat with cover, hinges and buffers.

(c) Urinals

Urinals shall be of the type detailed or scheduled, of white glazed vitreous china, wall mounted, with an automatic or a manual flushing system, and chromium-plated fittings.

(d) Wash-hand-basins

Wash-hand-basins shall be a single wash through concrete, wall mounted on a pair of cast-iron brackets, and fitted with chromium-plated fittings consisting of one taps, outlet and chain, and supplied with a plug and an anti-siphon trap.

(e) Sinks

Sinks shall comply with the requirements of SANS 242 and shall be complete with cabinet, chromium-plated outlet, anti-siphon trap, plug, chain and two bib taps or one mixer tap, all as detailed or as scheduled.

(f) Pipes and tubing

Cast-iron and steel pipes used in plumbing work shall comply with the requirements of SANS 746 and SANS 62 respectively. Copper tubing shall comply with the requirements of SANS 460 and malleable cast-iron fittings with SANS 509.

PD 08.2 CONSTRUCTION

Plumbing shall be carried out strictly in accordance with the Drawings and with the National Building Regulations, with specific reference to Government Notice R1875 dated 31 August 1979.

Steel pipes and their malleable cast-iron fittings shall be joined with red lead and hemp, lead pipes shall have wiped soldered joints, and cast-iron pipes shall be joined by caulking with hemp and metallic lead.

Soil pipes from WCs shall have an internal diameter of at least 100 mm and shall be fitted with a pan connector and an access bend (or an access junction where a vent pipe is used), and carried through walls and into the ground for connection to the sewer. Vent pipes shall be fitted with approved balloon gratings.

Waste pipes from basins and sinks shall have an internal diameter of at least 32 mm and shall discharge into gulleys. Bends for waste pipes shall incorporate cleaning eyes.

Cisterns, basins and sinks shall be connected to the pipe system with 12 mm diameter copper service pipes, and chromium-plated stopcocks shall be installed for isolation and maintenance purposes.

PD 09 PAINTING

PD 09.1 GENERAL

No paint shall be applied to any surface containing traces of dust, grit, grease, oil, loose rust, millscale or corrosion products of any kind or to any surface that is not free from moisture. Where necessary, surfaces shall be thoroughly washed to remove all traces of soluble salts and/or corrosive air-borne contaminants prior to painting, and the surfaces shall be dried and painted immediately thereafter.

Welding shall be completed in so far as it is possible before painting commences, but in cases where welding can be done only at a later stage, no paint shall be applied to within 75 mm of the proposed weld position unless otherwise specified. Welds and adjacent parent metal shall be abrasive blasted and/or ground and all contaminants such as flux shall be removed prior to painting.

Surfaces of members which are to rest on concrete or other floors or which will be otherwise inaccessible after erection shall receive the full paint system prior to erection.

Damaged paint areas on metal surfaces shall be cleaned, rust spots removed where applicable and the surrounding paint which is still intact shall be feathered for a distance of 20 mm beyond the damaged area. Spot priming and repair shall consist of all the coats previously applied and shall overlap the damaged area.

Damaged galvanised areas shall be cleaned and any rust spots and any flakes of the coating surrounding the damaged area removed. The coating shall then be restored by zinc spraying or soldering, or painting with a zinc-rich paint, as may be approved by the Engineer.

Where the shop coat is allowed to age for a few months before the final painting is done, light sanding or rubbing with steel wool or scrubbing with clean water using a bristle brush shall be carried out.

Steel to be embedded in concrete shall not be painted below 50 mm from the final level of the concrete.

Each priming coat and each undercoat of paint shall be inspected and approved by the Engineer before any subsequent undercoat or finishing coat is applied.

All finishing colours shall be as shown on the Drawings, or as directed by the Engineer.

PD 09.2

MATERIALS

Paints shall comply with the requirements of the appropriate Specifications below:

(a) Primers

| | |
|------------|--------------------------------------|
| SANS 312 : | Red-lead based for structural steel |
| SANS 678 : | For wood |
| SANS 679 : | Zinc chromate for steel |
| SANS 723 : | Etch-wash primer for metals |
| SANS 912 : | Calcium plumbate for galvanised iron |
| SANS 926 : | Zinc-rich epoxy for steel |

(b) Undercoats

| | |
|------------|--------------------|
| SANS 681 : | For all undercoats |
|------------|--------------------|

(c) Finishing coats

| | |
|------------|---|
| SANS 515 : | For interior use, flat and egg-shell finish |
| SANS 630 : | For interior and exterior use, high-gloss enamel |
| SANS 631 : | For interior and exterior use, oil gloss paint |
| SANS 633 : | For interior use, emulsion paint |
| SANS 634 : | For exterior use, emulsion paint |
| SANS 684 : | For exterior use on structural steel |
| SANS 801 : | For interior and exterior use, epoxy-tar paint |
| SANS 802 : | For interior and exterior use, bituminous aluminium paint |
| SANS 887 : | For interior use, glossy and egg-shell varnish |

The Contractor shall furnish the Engineer with the following information and details regarding the paints and decorative materials for the painting system he proposes to use, for written approval:

- (i) The name of the manufacturer and trade name
- (ii) The brand, type or grade of paint and the appropriate SANS Specification
- (iii) Manufacturer's data sheets, colour references, instructions for use, including surface preparation, sealers, primers, undercoats, finishing coats, coat thicknesses and curing periods, which shall all be considered as being part of these Specifications if approved by the Engineer
- (iv) Safeguards to protect the applied paint from damage until the work is accepted by the Engineer
- (v) The shelf or pot life of materials, if applicable

-
- (vi) An undertaking that the proposed paint system is suitable for its intended use and that the various coats of paint are compatible with one another

Where proprietary brands are used, the manufacturer's priming and all subsequent coats of paint suitable for that particular brand shall be employed in accordance with the manufacturer's instructions.

No other materials of a similar nature and quality or from another manufacturer may be used instead of those approved, unless written permission to do so has been obtained from the Engineer.

All materials shall be brought onto the Site in containers sealed by the manufacturer. Paints of a different quality, type, brand or colour shall not be mixed, or thinned and shall not be adulterated in any way, but shall be used as supplied by the manufacturer. Any mixing or tinting required shall be carried out by the manufacturer.

Tinting of paint on the Site by the Contractor will only be allowed with the written permission of the manufacturer and the Engineer.

PD 09.3 INSPECTION AND PRELIMINARY WORK

Before commencing paintwork, the Contractor shall carefully inspect the surfaces to be painted to satisfy himself that the surfaces are in a satisfactory or acceptable condition to receive the paint system specified.

All metal fittings and fastenings shall be removed where applicable before the preparatory processes are commenced. On completion, the metal fittings and fastenings shall be cleaned and refitted in position.

PD 09.4 WORKMANSHIP AND FINISHES

Paint may be applied by spray, brush or roller depending on the materials used, the surface to be painted, and the manufacturer's instructions.

Every coat of paint, irrespective of the method of application, shall be adequately and permanently keyed or bonded to the base material or previously applied coat, and shall be evenly distributed, continuous, free from sags, runs, brush marks, pin holes or other imperfections, and shall dry to a smooth finish.

An approved water trap and air-regulating valve shall be furnished and installed on all equipment used in spray painting.

Before painting the interiors of buildings they shall be cleaned and the floors shall be washed and kept free from dust during the progress of the interior work.

The Contractor shall protect all nearby surfaces against disfigurement by spatters, splashes and smirches of paint or paint materials. The Contractor shall be responsible for any damage by paint or dirt caused by his operations to vehicles or property or injury to persons and he will be required to provide protective measures to prevent any such damage or injury and make good, where required, at his own expense.

If passing traffic creates dust which may harm or spoil the appearance of external painted surfaces, the Contractor shall sprinkle the adjacent areas with water, at his own cost, for a sufficient distance on each side of the location where painting is being done.

Undercoats shall be tinted by the manufacturer to distinguish between successive coats.

The final coats or finishing coats of paint shall be applied after all the other work in the vicinity has been completed.

The painter shall keep some of the final paint in reserve in the event of his having to make good any patching which may be required as a result of damage or unforeseen circumstances.

Upon completion, the Contractor shall, in the case of buildings, clean all glass, remove all paint spots from walls, floors and fittings, and leave the premises clean and fit for occupation.

All inflammable materials, comprising solvents, thinners, wiping cloths, etc, shall be placed in tightly closed containers and properly disposed of.

PD 09.5

PAINTING OF PLASTER, CONCRETE OR BRICK SURFACES

(a) Surface preparation

Surfaces for painting shall be prepared by sandpapering, scraping or wire-brushing to remove loose material, dust, laitance, scum or other deleterious materials or high spots. Defective areas shall be cut out where necessary and made good with an approved non-shrink filler. Cracks shall be cut out, suitably keyed, and given a coat of an approved bonding agent before the filler is applied. All patches shall be rubbed down to an even surface. Surfaces shall be washed and allowed to dry.

Surfaces shall be treated with neutralising liquid for walls, and if the surface is coarse or textured, either one full coat of pigmented wall sealer or one full filler coat shall be applied in addition to the neutralising liquid.

(b) Paint application

Prior to the emulsion paint being applied, the surface shall be sealed with an approved clear sealer and primed with an undercoat diluted to 50 per cent. Emulsion paint (PVA or acrylic) shall then be applied in two finishing coats.

Egg-shell finish (alkyd oil-based), oil gloss paint or enamel gloss paint shall be applied as follows: one coat of universal undercoat shall be applied and it shall be followed by one coat of a mixture comprising 50% of the undercoat and 50% of the paint to be used for the finishing coat. A finishing coat of semi-gloss egg-shell, or oil gloss paint or enamel gloss paint shall then be applied.

PD 09.6

PAINTING OF WOODWORK

(a) Surface preparation

The surfaces shall be cleaned, sandpapered and rubbed down to a smooth, even face before painting. The moisture content of the timber shall not be more than 20% at the time when the first coat is applied. All cracks, shakes or scars shall be filled flush with a filler approved by the Engineer before painting. The surface shall then be washed with cleaner and allowed to dry.

(b) Primer application

One coat of an approved wood primer shall be applied.

After open-grained timber has been prepared and primed, the grain shall be stopped and filled with synthetic filler and rubbed down with water paper.

All new woodwork shall be properly primed on all surfaces and edges before being fixed in position. All woodwork not previously painted shall be given a prime coat, well brushed in.

(c) Paint application

One coat of universal undercoat shall be applied followed by one coat of a mixture of 50% of the undercoat and 50% of the paint to be used for the finishing coat. A finishing coat of oil gloss paint or enamel gloss paint or semi-gloss egg-shell (alkyd oil-based) paint shall then be applied.

(d) Varnish finish

Two coats of gloss varnish or egg-shell varnish shall be prepared, stopped and applied.

PD 09.7

PAINTING OF METAL SURFACES

(a) General

Wherever possible, all painting shall be done at the manufacturer's works, but where this is not feasible, the Engineer may permit the application of the undercoat and finishing coats to be carried out on the Site, in which case a prime coat shall be applied at the manufacturer's works prior to the members being despatched to the Works.

(b) Surface preparation

The preparation of metal surfaces shall comply with SANS Code of Practice 064 and shall receive the greatest care to ensure rust-free conditions prior to the paint system being applied.

All surfaces shall be prepared by removing loose paint, rust, plaster, scale, dust, dirt, grease, etc and by repairing or patching defective paint surfaces before painting or repainting. Damaged shop-primed surfaces shall be thoroughly cleaned of rust and patched with a prime coat.

(c) Paint application

(i) Iron and steel work

All iron and steel work shall be properly primed with a red-lead-based primer where steel work is likely to be exposed to the elements for longer than 30 days. Zinc-chromate primer may be used where overpainting will be completed within 30 days of priming. Metal-etch wash primers may be used under dry conditions where overpainting will be completed within 24 hours of priming. The dry-film thickness of the prime coat shall not be less than 0,300 mm.

After priming, one coat of universal undercoat shall be applied. If necessary, the undercoat shall be tinted to a shade just lighter than the desired finish with approved liquid stainers. The dry-film thickness shall not be less than 0,250 mm.

The two finishing coats shall either be of alkyd resin-based synthetic enamel, gloss or matt oil paint, or as specified elsewhere. The dry-film thickness shall not be less than 0,250 mm per coat.

When mating surfaces are brought together, both surfaces shall have been given the full treatment specified, but where this cannot be done, each surface shall be given a copious coating of primer and the surfaces drawn together while the paint is still wet.

The portion of structural steel members to be buried in soil, and all bases to a height of 500 mm shall be given two coats of an epoxy-tar primer instead of the zinc-chromate primer specified for other surfaces.

The surfaces of steel and cast-iron articles, such as floor gratings, grids and manhole covers, shall, after a thorough brushing to remove loose rust, be painted with two coats of epoxy-tar paint, each at least 0,230 mm thick.

(ii) Galvanised iron and steel

All traces of protective coating shall be removed with galvanised iron cleaner, and two coats of calcium plumbate primer shall be applied. One coat of tinted universal undercoat and two finishing coats of alkyd resin-based synthetic enamel gloss paint shall be applied.

(iii) Non-ferrous metals

Surfaces of aluminium, copper, etc shall be prepared and cleaned, and one coat of self-etch zinc-chromate wash primer shall be applied. One coat of universal tinted undercoat and two finishing coats of enamel gloss paint shall then be applied. Where non-ferrous metals are not to be painted, the surfaces shall be cleaned, polished and two coats of lacquer applied.

PD 09.8 PAINTING OF FLOOR SCREEDS

Where chemicals could cause damage to floors, such floors shall be painted with an approved epoxy paint. The type of paint to be used will be shown on the Drawings and will depend on the types of chemical that are used.

The preparation of such floor screeds for painting and the subsequent application of paints shall be carried out strictly in accordance with the manufacturer's instructions.

PD 09.9 PAINT THICKNESS

Unless otherwise specified, all coats of paint, whether prime coat, undercoat or finishing coat, shall have a dry-film thickness of not less than 0,200 mm, irrespective of the method of application.

PD 09.10 INSPECTION

The Contractor shall provide the necessary equipment to establish whether the primers, undercoats and finishing coats have been applied to the correct thickness according to the correct applications. The Engineer may take samples of the paints during painting operations for testing and quality control.

PD 10 MEASUREMENT AND PAYMENT

PD.01 BRICKWORK:

(a) (Thickness, type and class indicated) Unit: m²

(b) Etc for other thicknesses, types and classes

The unit of measurement shall be the square metre of each type of brickwork built, calculated from the leading dimensions of the brickwork. Areas of pipes, etc built into

brickwork shall not be included in the areas measured. At corners and intersections common to more than one brick wall, the areas shall be measured only once.

The tendered rates shall include full compensation for the construction of the brickwork complete as specified, including pointing, the building-in of conduits, beams, lintels, pipe sleeves, doors, windows, the raking-out of joints, damp-proof course, brickforce reinforced as specified, etc.

PD.02

PLASTER WORK:

(a) (Thickness of plaster and finish indicated) Unit: m²

(b) Etc for other thicknesses and finishes

The unit of measurement shall be the square metre of each type of coat completed as specified.

The tendered rates shall include full compensation for the construction of the plaster work, including supplying all materials, mixing, applying, finishing, forming reveals, joints, narrow widths, rounded angles, V-joints, etc complete as specified.

PD.03

FLOOR SCREEDS:

(a) (Description and thickness indicated) Unit: m²

(b) Etc for other thicknesses

The unit of measurement shall be the square metre of floor screed laid, as specified, on floors, steps or areas shown on the Drawings or as designated by the Engineer.

The tendered rates shall include full compensation for constructing the floor screeds, including supplying all materials, mixing, laying, finishing, and forming nosings, readings, skirtings, etc.

PD.04

DOORS AND WINDOWS:

(a) (Type and size indicated) Unit: number

(b) Etc for other types and sizes

The unit of measurement shall be the number of doors and windows installed complete as specified.

The tendered rates shall include full compensation for manufacturing and installing steel doors, windows, and frames complete with hinges, handles, locks, barrel bolts, retaining devices, door stops, stays and any other work necessary to complete the work as specified or as shown on the Drawings. The tendered rate for windows shall also include full compensation for glazing, window sills as specified, and damp-proof sheeting.

PD.05

STRUCTURAL TIMBER:

(a) Plates (sizes indicated) Unit: m

(b) Beams (sizes indicated) Unit: m

(c) Joists (sizes indicated) Unit: m

-
- (d) Rafters (sizes indicated) Unit: m
- (e) Purlins (sizes indicated) Unit: m
- (f) Roof trusses complete (drawing number indicated) Unit: number

The unit of measurement shall be the metre of individual types of timber element or the number of complete trusses installed.

The tendered rates shall include full compensation for supplying all materials and manufacturing, cutting, wasting, jointing and installing the timber as shown on the Drawings.

PD.06

CEILINGS:

- (a) Plaster-board ceiling (type and thickness indicated):
- (i) Fixed ceiling Unit: m²
- (ii) Suspended ceiling Unit: m²
- (b) Fibre-cement ceiling (thickness indicated):
- (i) Fixed ceiling Unit: m²
- (ii) Suspended ceiling Unit: m²

The unit of measurement shall be the square metre of fixed or suspended ceiling installed complete as scheduled.

The tendered rates shall also include full compensation for the construction of the ceilings, including the exposed tees, insulation blanket and bracing as specified, as well as the suspension system where applicable.

PD.07

JOINERY:

- (a) Items measured by number:
- (i) Doors (type and size indicated) Unit: number
- (ii) Etc for other items measured by number
- (b) Items measured by length:
- (i) Skirtings (type and size indicated) Unit: m
- (ii) Etc for other items measured by length

The units of measurement shall be the metre of each type and/or size of joinery item specified.

The tendered rates shall include full compensation for supplying all materials, and manufacturing, cutting, wasting, fixing and installing the joinery items.

PD.08

MISCELLANEOUS WORK:

- (a) Paintwork Unit: sum



(b) PlumbingUnit: sum

(c) Electrical workUnit: sum

The tendered sums shall include full compensation for the supply of all materials, for transport, storage, all equipment and labour, all temporary work and safety precautions, replacement of defective work, protection of completed work and clean-up after completion.



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PARTICULAR SPECIFICATION

PM OPERATION AND MAINTENANCE MANUALS

PARTICULAR SPECIFICATION

PM OPERATION AND MAINTENANCE MANUALS

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PM 01 SCOPE

This Particular Specification covers the compilation and supply of Operation and Maintenance Manuals according to the specification as detailed below.

PM 02 SUBMISSION OF MANUALS

- (a) A complete set of Provisional Operation and Maintenance Manuals shall be handed over to the Engineer at least one month before any commissioning tests commence. The manuals will be checked by the Engineer and returned to the Contractor with comments. The Contractor shall make the necessary changes and amendments to the manuals to incorporate the Engineer's comments in the manuals.
- (b) Portions of the information required in terms of this section may only be omitted with approval of the Engineer.
- (c) After the Operation and Maintenance Manuals have been approved by the Engineer, four sets of the manuals shall be provided by the Contractor for distribution by the Engineer.

PM 03 FORMAT OF MANUALS

- (a) Physical appearance
 - (i) Manuals shall be bound in hard cover lever-arch files with plastic coatings. The files shall be clearly labelled on the outer front cover and on the spine with the following information.
 - The Contractor's name (logo optional)
 - The project title
 - The title "Operation and Maintenance Manuals"
 - The month and year during which the manuals are finally handed over to the Employer
 - (ii) Pamphlets and bound leaflets/booklets from suppliers shall be placed in plastic sachets, especially if they are of non-standard size.

- (iii) Large format Drawings shall be folded and placed in plastic sachets from where they can be easily removed.
- (iv) The sections of the manuals described below shall be clearly partitioned.
- (v) Systems and/or functional units on the Site shall be treated as units in the manuals, even if different types of equipment occur on such units. Cross-referencing may be used.

(b) Contents

The manual shall contain the following:

- (i) Title page
- (ii) Contents list
- (iii) List of Drawings and appendices
- (iv) Plant description

This section shall give a brief but detailed overview of the complete Plant covered by this manual including all systems and/or functional units.

- (v) Maintenance and lubrication schedule (summary)

This maintenance schedule shall be in a table format and shall include a summary of all the maintenance actions required of all the different systems and/or functional units covered by this manual to give a single summary of all maintenance actions required for the complete Plant.

The schedule shall indicate daily, weekly, fortnightly, monthly and yearly maintenance actions. A lubrication schedule summary shall also be included under this section.

- (vi) The main body of the manual shall be divided into sections, if necessary, with each section covering a system and/or functional unit. Each of these sections shall contain the following information in the sequence given below:

(1) Plant description

This section shall give a brief but detailed description of the system and/or functional unit in general.

(2) Maintenance and lubrication schedule

This maintenance schedule shall be in a table format and shall contain all the maintenance actions required for all the mechanical equipment supplied. The schedule shall indicate daily, weekly, fortnightly, monthly and yearly maintenance actions. A fully detailed lubrication schedule shall also be included under this section.

(3) Mechanical flow diagrams (MFDs)/Single line diagram

Mechanical flow diagrams (for mechanical systems) or single line diagrams (for electrical systems) of the system and/or functional unit shall be included in the Operation and Maintenance Manuals for easy reference by the plant operators.

(4) Operating instructions

The operating instructions shall be a step-by-step description of the "manual" start-up and shut-down procedure for every piece of equipment and/or process supplied with references to the MFDs.

For automatic operation, the operators shall be referred to the automatic control manual (if applicable).

(5) Fault finding

A fault finding table indicating the possible causes of failure and rectification procedures for all the equipment supplied shall be included in the Operation and Maintenance Manuals.

(6) Equipment data sheets

A data sheet shall be drawn up for every piece of equipment and/or machine supplied containing the following information:

- Equipment tag number
- Equipment description
- Supplier details
- Model/make
- Ordering details
- Details of fixed components
- Details of lubrication
- Maintenance references (refer to supplier's technical manuals)

(7) Equipment technical manuals

For each piece of equipment and/or machine supplied the following shall be included in this section of the Operation and Maintenance Manuals:

- The supplier's Manual of Operation and Maintenance Instructions
- Parts lists and data sheets including all characteristic curves for machines installed indicating the operation point
- Calibration charts
- Test certificates for hydraulic pressure tests, flame-proof grading, materials, non-destructive examinations, coating and lining details, etc
- Prints of applicable Drawings

(8) "As-built" drawings

Folded A3 size "as-built" drawings of the Plant and/or areas thereof shall be included in the manual where applicable.

PM 04 MEASUREMENT AND PAYMENT

**PM.01 COMPILATION AND SUPPLY OF OPERATION AND
MAINTENANCE MANUALS Unit: lump sum**

The unit of measurement shall be the lump sum.

The lump sum tendered shall include full compensation for compiling a draft set of Operation and Maintenance Manuals according to the specification, submitting the draft copy for comments and approval and incorporating any comments and modifications requested by the Engineer or Employer until the manuals are approved by the Engineer. The tendered rate shall further include full compensation for supplying four (4) complete sets of approved manuals complete with complete sets of MFDs and "as-built" drawings.



METSIMAHOLO LOCAL MUNICIPALITY

**RE-ADVERT: APPOINTMENT OF A 7 CE/GB OR HIGHER CIDB REGISTERED
CONTRACTOR FOR THE CONSTRUCTION OF TOILETS AND SEWER
NETWORK REPAIR IN GORTIN PHASE 1.**

BID NO.: 23/2023/24

PARTICULAR SPECIFICATION

PN MEASURING INSTRUMENTS

PARTICULAR SPECIFICATION

PN MEASURING INSTRUMENTS

CONTENTS

| | |
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| PN 01 | SCOPE |
| PN 02 | PROPELLER FLOW METERS |
| PN 03 | MEASUREMENT AND PAYMENT |

PN 01 SCOPE

This is a Particular Specification and covers the supply, manufacture, delivery, installation, calibration, testing, commissioning and maintenance of instruments for the measuring of flow in water.

PN 02 PROPELLER FLOW METERS

PN 02.1 GENERAL

The instrument shall be of a type suitable for application in domestic water. It shall have high stability properties and shall require negligible maintenance over extended periods. The required flow rates will vary from 5 l/s to 100 l/s.

PN 02.2 OPERATING PRINCIPLE AND CONSTRUCTION REQUIREMENTS

The metre shall be an inferential meter operating on the horizontal axis propeller principle. A helical vane rotor shall be driven by the flow of water and revolve in direct proportion to the quantity of water passing through the meter. The revolutions of the rotor shall be transferred by appropriate reduction gearing and a magnetic drive to a straight reading sealed counter calibrated in cubic metres. The loss of head shall be minimal as the water passes through the meter without changing direction.

The meter shall be designed with the minimum of components. All materials in the meter shall be selected for their ability to withstand wear and corrosion to give long working life with the minimum maintenance.

The meter shall be designed for high and sustained flows associated with bulk metering. The meter shall have an accuracy of $\pm 2\%$ or better over the full measuring range, and $\pm 5\%$ or better for flows less than 1,0% of the permissible continuous flow rate.

The meter shall be suitable for fitting in horizontal, vertical or inclined pipelines without affecting its accuracy. Pressure surges associated with pumps starting and stopping shall not affect the accuracy of the meter or cause damage to the measuring mechanism and propeller.

An arrow cast on the body and cover shall indicate the direction of flow and the meter shall be fitted accordingly. Before the meter is installed, the pipework shall be thoroughly flushed to remove any foreign matter which will otherwise collect in the meter and choke or damage it.

PN 03 MEASUREMENT AND PAYMENT

PN.01 SUPPLY AND DELIVERY OF FLOW METERS:

(a) Propeller (indicate diameter) Unit: number

The tendered rates shall include full compensation for the supply and delivery to the Site of the required number of flow meters of each type.

PN.02 INSTALLATION OF FLOW METERS:

(a) Propeller (indicate diameter) Unit: number

The tendered rates shall include full compensation for the installation of the required number of each type of flow meter, inclusive of all labour, installation materials and sundries to give a fully operational and serviceable installation.

PN.03 COMMISSIONING OF FLOW METERS:

(a) Propeller (indicate diameter) Unit: number

The tendered rate shall include full compensation for the commissioning and calibration of the required number of each type of flow meter. The rate shall be inclusive of all labour and commissioning materials and use of commissioning instruments.

**PN.04 SUPPLY AND INSTALLATION OF STRAINER FOR
PROTECTING THE FLOW METER:**

(a) (State diameter and type) Unit: number

(b) Etc for other items

The tendered rate shall include full compensation for supplying and installing each type of strainer.



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BID NO.: 23/2023/24

PARTICULAR SPECIFICATION

PSC

ELECTRICAL WORKS

DETAIL SPECIFICATION

CONTENTS

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11. EARTHING
12. STANDBY GENERATOR
13. OPERATING AND MAINTENANCE MANUALS
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15. MEASUREMENT AND PAYMENT

1. INTRODUCTION

This part of the specification provides the detail of the electrical and instrumentation equipment and services required for the supply, delivery to site, installation and commissioning of equipment to render a complete operational water supply to Boschdal. This detail specification may also include descriptions of items that form the basis for payment in the schedule of quantities.

2. SCOPE OF WORK

The scope of work to be carried out under this part of the Contract is listed in Part A and detailed in the following paragraphs below.

3. SPARES

One month before commissioning and handover of a system or functional unit, the Contractor shall submit a detail price list of recommended spares and consumables required for the system. The list shall indicate which spares are consumable spares, and which are strategic spares together with an expected monthly consumption.

4. MOTOR CONTROL CENTRES

All the MCC schedules are detailed in Annexure A.

4.1 PUMP STATION

The following 380 V MCC shall be designed, manufactured, tested, delivered to site, installed and commissioned in accordance with the requirements of specifications: SWITCHBOARDS AND MOTOR CONTROL CENTRES and the additional requirements detailed below:

MCC : Submersible and Dry-Well Pump Station
Board label : MCC =01
Fed from : Incoming Supply Transformer
Layout : Floor standing, front access, bottom cable entry
Voltage : 380/220 V (rated 400/231 Volt)
Fault level : 10kA for one second
Busbars : 500A per phase plus 200A neutral.
Auxiliary busbars : One set (live and neutral)
Colour : Exterior – B26 as per SABS 1091
Interior – B26 as per SABS 1091, with white equipment chassis plate
Enclosure rating : IP44 to SABS 1222
Circuits : Circuits shall be as per Motor Control Centre Schedule and the schematic diagrams

(a) Additional requirements

(i) All plug-in type electrical equipment shall be provided with appropriate retaining clips.

- (ii) The detail requirements for the MCC is indicated in the respective schematic diagrams for the Motor Control Panel.
- (iii) All cables shall be glanded on removable gland plates in the bottom cable entry gland compartment of the panel.
- (iv) The Contractor shall do all cabling and terminations from the supply point to the MCC.
- (v) The MCC shall be installed across a cable trench in the pumpstation. Purpose made galvanised support brackets shall be manufactured, supplied and installed across the width of the trench to support the MCC.
- (vi) The Contractor shall ensure that the required resources are available on site to comply with the requirements.
- (vii) The specified installation requirements for the MCC shall be provided for in the tendered rates for installing the MCC.
- (viii) All doors shall be bonded to the enclosure by means of braided copper conductors (16mm² minimum screw-down bugs and brass screws).
- (ix) Removable gland plate compartment covers and busbar covers are not acceptable. They shall all be hinged and comply with the requirements detailed in STD SPEC: SWITCHBOARDS AND MOTOR CONTROL CENTRES.
- (x) The Contractor shall use the schematic drawings, included in Annexure A of the specification as information, but shall submit detailed schematic diagrams for the approval of the Engineer before construction.
- (xi) Busbar droppers shall be solid copper bars as secondary busbar supply to the MCC cubicles. Cable droppers will not be accepted.
- (xii) The Contractor must note that the requirements to provide type test certificates for the MCC in the STD SPEC: SWITCHBOARDS AND MOTOR CONTROL CENTRES, Clause 5.5.1 (b) is required for this contract. The Contractor shall submit the detail design of the MCC structural and busbar arrangements with his tender for approval by the Engineer.
- (xiii) The new MCC shall be installed in the position indicated on the drawings.
- (xiv) All the relevant new cables shall be routed and installed to the relevant equipment, terminated to the new MCC and equipment.
- (xv) The MCC and stop/start enclosures shall be manufactured from 3CR12 sheeting with a minimum thickness of 2mm.
- (xvi) The enclosure shall be a freestanding unit mounted to the concrete floor supplied by others.
- (xvii) All operators shall be operable without the need for opening the inner panel door, except for the test selector switch in each motor starter circuit.
- (xviii) All enclosures shall be ventilated without degrading dust and vermin proofing. Enclosures containing heat producing equipment shall be louvered such that adequate upward and cross ventilation is obtained. Ventilation shall ensure that the temperature at any point within the enclosure does not exceed 40 °C, irrespective of the ambient temperature, when the equipment is operating at full load.
- (xix) The following plastic Safety Notices shall be installed on the MCC outer doors and shall be included in the MCC rate:
 - A warning prohibiting unauthorized persons to tamper with equipment
 - First aid instructions for persons shocked through contact with electrical equipment
 - Fire-fighting directions
 - Electrical danger sign
- (xx) The following plastic Safety Notices shall be installed on all entrances leading into the room where the MCC is installed:
 - A warning prohibiting unauthorized persons to tamper with equipment
 - Electrical danger sign

4.2 REMOTE CONTROL PANEL

- (i) A remote control panel schematic diagram, shall be provided for the controlling of the backwash sequence at the rapid filter backwash plant.
- (ii) The enclosure incorporating the required control shall be fully water, weather and vermin-proof and shall have a minimum rating of IP65 to SABS 1222. The enclosure shall be manufactured from 3CR12 and shall be painted B26 to SABS 1091.
- (iii) The remote control station shall be wall mounted, 1000mm above final floor level.
- (iv) The remote control station shall be adequately designed to provide sufficient space for the required pushbuttons and lights complete with their appropriate labels, termination of all control wiring and cabling to and from the MCC and the glanding of cables.

5. ITEM TAG NO SERVICE DESCRIPTION OF PUMPS

01=WP=01 Water Pump No.1
01=WP=02 Water Pump No.2
01=WP=02 Water Pump No.3
01=TWP=02 Water Pump No.4

6. INSTRUMENTATION

All instrumentation equipment and instrumentation installations shall conform to the requirements of the relevant standard specifications. The enclosure shall be installed in a directly accessible position and the enclosure door shall face south.

Calibration certificates for all the instruments shall be submitted to the Engineer before installation commences. All flow meters must be calibrated in m³/h for flow rate and m³ for flow totalisation.

6.1 ULTRASONIC FLOW METER

The ultrasonic flow meter specified for the total inflow to the works shall comply with the following operating principle:

- (a) Ultrasonic Pulses are transmitted from a transducer which is not in contact with the medium, to another transducer across the diameter of the pipe at a certain angle to the centre line of the pipeline. As a result of the angle of pulse transmission the pulse from the one transducer travels with the flow of the medium, while the pulse from the other transducer travels against the flow of the medium. Measurement of the difference in the two flight times is related to the flow rate of the medium.
- (b) The ultrasonic transducer sockets shall be welded onto the outside of the flow tube (pipeline).
- (c) The ultrasonic transducer sockets shall be manufactured to provide an angle of pulse transmission of 30° relative to the centre line of the low tube.
- (d) The ultrasonic transducer sockets shall be manufactured of stainless steel.
- (e) At least two (2) transducers shall be used which are connected via R58 co-axial cable to the transmitter.
- (f) The installation of the ultrasonic transducers shall be such that it can be removed from the sockets (described in (c) above) while the pipeline is in operation and under normal operating pressure. The pressure rating shall not be less than 35 bar.
- (g) A galvanically isolated 4-20 mA output linear to the measured flow shall be provided for remote indication and processing. The instrument shall be equipped with a flow rate indicator and an 8 digit non-resettable totaliser.
- (h) The flow meter shall be suitable for installation on a 300mm diameter pipeline.
- (i) A galvanically isolated pulsed output shall be provided for remote totalising.
- (j) A single pole change over relay shall be provided to signal mains failure or any other instrument fault.
- (k) The control unit and associated power supplies and surge protection shall be housed in an instrument enclosure as per requirements of STD SPEC: MEASURING INSTRUMENTS.
- (l) The lighting and surge suppression requirement as per STD SPEC: MEASURING INSTRUMENTS shall be complied with.
- (m) The Contractor shall prepare all the required straightner pipes and have them factory assembled, tested and calibrated, before it is taken to site and installed.
- (n) The Contractor shall also remove the existing flow meter and hand over all redundant equipment to the Engineer.

NOTE: The Mobrey Sparling A500 flow meter is preferred to be supplied and installed. Details of the flow meter shall be forwarded to the engineer for approval.

6.3 LEVEL SWITCHES

All level switch installations for the reservoirs shall comply with the requirements of STD SPEC: SWITCHBOARD AND MOTOR CONTROL CENTRES. The level sensing shall be by means of totally encapsulated mercury - type pear ball float level switches (Flyght type

ENM 10) supplied complete with a 10m length cable. The required level switches shall be installed as detailed on drawing.

All material used shall be grade 316 stainless steel. The suspension plate shall be dimensioned for the required number of float level switches. The maximum distance between spacing plates shall be 600 mm.

All fastening material used shall be of stainless steel including fastening bolts, nuts, washers, etc. The minimum distance that shall be maintained between level switches, walls and other equipment is 150 mm.

The level control switches shall be wired to a junction box with minimum rating of IP65 to SABS 1222 where they shall be terminated on an approved terminal strip length accommodate all wiring plus 25% spare. The minimum terminal strip shall be 150 mm. All cable glands shall have an IP65 to SABS 1222 protection rating or better. PVC/Nylon cable glands will not be accepted.

The following level switch installations shall be supplied, delivered on site, installed, tested and commissioned by the Contractor:

Item Installation Position Type of Level Switch Comments

- a) 3 MI Water Reservoir Pearball High Level cut-out
- b) 3 MI Water Reservoir Pearball Start 1 Level
- c) 3 MI Water Reservoir Pearball Start 2 Level
- d) 300 kl Tower Water Reservoir Pearball High Level cut-out
- e) 300 kl Tower Water Reservoir Pearball Start 1 Level
- f) 300 kl Tower Water Reservoir Pearball Start 2 Level

7. SMALL POWER

7.1 STANDARD SPECIFICATIONS, REGULATIONS AND CODES

7.1.1 The latest edition, including all amendments up to date of tender of the following specifications, publications and codes of practice shall be read in conjunction with this specification and shall be deemed to form part thereof:

7.1.1 SANS 10142-1 – Wiring of premises 2003

7.1.2 SABS 0400 – Building regulations

7.1.3 SABS 0313 – Earthing of structures

7.1.4 Manufacturer's specifications and installation instructions

7.1.5 The Contractor shall ensure that all safety regulations and measures are applied and enforced during construction, repair and maintenance work on cabling, wiring, distribution boards and luminaires.

7.2 DISTRIBUTION BOARDS

7.2.1 The distribution board requirements are as shown on the schematic drawings. Note 5 kA minimum fault level.

7.2.2 Electrical Contractors are advised to order the distribution boards and equipment from a reputable manufacturer, as inferior boards will not be accepted.

7.2.3 It shall further be noted that late approval of drawings and distribution boards due to non-compliance with the specification will not relieve the Electrical Contractor from his obligations to complete the installation according to program. No claims for delays or extension of time in this regard, will be entertained.

7.2.4 All phase, neutral and earth busbars shall be adequately sized to accept all present as well as future circuits and connections.

7.2.5 Door hinges shall be of the Perano manufacture. The steel door shall be padlockable.

7.2.6 The distribution board shall be surface mounted and shall have a single compartment with lockable door with inner steel drawing pocket. Note strict labelling requirements.

7.2.7 The distribution board shall be powder coated and colour shall be as specified.

7.2.8 The front face panel shall be secured by means of the Perano type catches. Catches with slots or square key formats will not be acceptable.

7.3. CONDUITS

- 7.3.1 Internal conduits shall be PVC and installed flush inside walls and slabs and surface mounted in ceiling voids. No Conduit installation on the wall surfaces shall be permitted in the building.
- 7.3.2 Conduit work under open roof structures and inside ceilings shall be done in a rectangular grid pattern. Steel saddles shall be used inside ceilings. Caddy clamps shall be used on roof purlins, maximum spacing of saddles and clamps shall be 750 mm.
- 7.3.3 All external conduits exposed to sunlight or rain shall be Bosal-type galvanised steel. External draw box covers shall be sealed with white silicone after the installation has been completed.
- 7.3.4 All conduits installed for services provided by others shall be fitted with 2,5 mm ϕ galvanised draw wire if the wiring is not installed as part of this subcontract.
- 7.3.5 Chasing where applicable, shall only be done with an angle grinder or approved methods. Prior approval must first be obtained from the architect or engineer before any chasing work is carried out.

7.4. LIGHTING INSTALLATION

- 7.4.1 General
 - 7.4.1.1 Light fittings shall be delivered to site in boxes as packed by the manufacturer. When the installation is handed over, all light fittings shall be in a working condition, new and unused.
 - 7.4.1.2 The permanent light fittings intended for installation shall not be used for temporary lighting during construction. The certificate of completion for the installation will not be finalised, unless all light fittings and lamps are in working order.
 - 7.4.1.3 All fluorescent type light fittings shall be equipped with 26 mm diameter tubes, generally 1200 mm long and with a colour temperature of 4300 °K (cool white) and minimum colour rendering index (Ra) of 64. The Engineer will reject unmarked lamps. All costs to replace these lamps with marked lamps will be for the electrical contractor's account.
 - 7.4.1.4 All light fittings and light fitting components shall be approved by the Engineer and capacitors and ballasts shall bear the SABS mark of approval.
 - 7.4.1.5 Fluorescent tubes shall have bi-pin end cap arrangements and shall fit into telescopic spring assisted lamp holders to ensure that the lamps are always secure.
 - 7.4.1.6 The metal body parts shall be finished in white epoxy powder coating for maximum reflectance.
 - 7.4.1.7 Ballasts shall be of the electronic type and shall be power factor corrected to ensure a power factor better than 0,9.
 - 7.4.1.8 The Contractor shall submit samples for approval of all types of light fittings to the Engineer prior to procurement thereof.
- 7.4.2 Light switches

Light switches shall be rated at 16A, similar or approved equal to Legrand Mosaic manufacture, complete with white cover plates.
- 7.4.3 Schedule of luminaires

All light fittings shall be supplied complete with lamps.

Type Description
A 2 x 58 W SABS approved IP65 fluorescent luminaire with electronic ballast: LASCON type C2N 258 SS/ELB
B 2 x 18 W SABS approved IP65 fluorescent bulkhead luminaire: BEKA type 33218 or approved equal
C 250W HPS SABS approved floodlight: BEKA type Bekabeam 250W HPS/T WB

7.5 POWER OUTLETS

- 7.5.1 For the power installation, the Contractor shall be responsible for: -
 - Supply and installation of isolators for extractor fans.

- Final connection between isolator and extractor fan shall be by mechanical
- contractor.
- Supply and installation of 16A switch socket outlets.
- Supply and installation of a 32A 3-phase welding socket outlet.
- Wiring of all circuits back to the DB.
- Labelling of all outlets as specified.
- Testing of all circuits.

7.5.2 Socket outlets

7.5.2.1 Socket outlets shall be SABS approved 16A switched 2P + E complete with white socket outlet cover plates.

7.5.2.2 Earth wires are required to each socket outlet.

7.5.2.3 Single and double socket outlets shall each be mounted in a horizontal 100 mm x 50 mm wall box.

7.6 WIRING

7.6.1 Surfex or Norse foil-protected cable shall not be accepted.

7.6.2 All circuits shall be wired from fresh unused coils of red, white, blue and black conductors. The colours of conductors shall correspond to the phase from which that circuit is fed. An alternative colour may be used for the switched conductor between the light switch and the light fitting. The use of insulation tape to indicate phases will not be accepted.

7.6.3 Wiring shall not be drawn into conduit until the conduit installation has been completed, fitted with bushes and all moisture and debris have been removed.

7.6.4 Joints of any kind will not be permitted in wiring. No more than 2 single or 1 three phase circuit may be drawn into any conduit.

7.6.5 All conductors shall be marked by suitable cable markers indicating the circuit (e.g. L1 on both line and neutral conductors).

- Minimum conductor (size)
- Circuit
- Phase (mm²) Earth (mm²)
- Lighting power supply 2,5 2,5
- Switched socket outlets 4,0, 2,5
- Isolators 4,0 2,5

7.7 LABELLING OF CIRCUITS

All outlets and light switches shall be labelled with Brother-type decal labels on the cover plate. The label shall indicate the supply DB and circuit number (e.g. DB-M-L5).

7.8 WELDING SOCKET OUTLETS

Two Switched 380V, 3-phase, 4-wire and earth 40A welding socket outlets shall be provided and mounted on the wall in the MCC room and another point as specified by the Engineer. The installation position of the welding socket shall be confirmed on site. The socket outlet mounting height shall be 1200 mm above finished ground level. The socket shall be fitted with a 250 mA earth leakage unit, the switch operator of which shall be accessible to the plant operator.

Where the cross sectional area of the cores of the supply cable to the welding socket outlet exceeds 16 mm², a purpose made metal junction box with IP65 rating to SABS 1222 shall be provided and mounted on the stand below the socket outlet in such a way that the junction box does not interfere with the use of the socket outlet. The cable size shall be reduced to 16 mm², 4-core cable in the junction box.

8. LOW VOLTAGE CABLE INSTALLATION

8.1 CABLE GLANDS

All cable glands shall be CCG type posi-seal cable glands or equal and approved by the Engineer cable glands.

8.2 CABLE SCHEDULES

- (a) The required runs of cable are indicated in the preliminary cable schedules: MCC and Cable Schedules. The lengths as shown on the cable schedule are as determined from drawings and must be regarded as approximate only. Twenty one days before the Contractor wishes to order the cables, he shall inform the Engineer.

Within 14 days after receipt of above notification, the Engineer will furnish the Contractor with any revisions to the cable schedule. The Contractor shall measure the required lengths of cable from the actual routes on site and after making due allowance for reasonable excess at terminations and joints order the required cables. The Contractor will only be paid for actual lengths installed plus reasonable excess at terminations and joints.

- (b) The Contractor shall fill in the actual installed lengths of cable on the cable schedule in the space allowed as well as the gland size used.

8.3 MARKING AND STRAPPING

Both ends of the cable shall be marked with the cable number in accordance with the schedule. Each core shall be individually identified. Identification numbers will be approximately 10 characters and will comprise of the following specification:

- 316 stainless steel tape, with punched text 5 mm minimum, strapped with 4 mm wide 316 stainless steel tape on both ends of the cable.
The cables to be installed on cable racking shall be held to the racking at maximum intervals of 300 mm using cable ties/straps. No more than three cables will be permitted per individual cable tie/strap. All cable ties/straps shall comply with the following specification:
- 316 stainless steel bandit (4 mm, 6 mm or 8 mm width depending on cable sizes) strapping.

These marking and strapping requirements shall be provided for as part of the cable installation rates.

8.4 MAKING GOOD OF CABLE ENTRIES INTO BUILDINGS AND STRUCTURES

The Contractor shall be responsible for making good all cable entries into buildings and cable ducts and substation trench entries to the satisfaction of the Engineer. Making good of trench entries into buildings shall include, but shall not be limited to the shuttering of the entry and filling of all the gaps with a self expanding foam to give a water tight seal. No separate payment item will be provided for this.

The Contractor shall allow for these requirements in his rates for Substation Building Accessories.

8.5 CABLE JOINTS

No cable joints shall be permitted except with special approval from the Engineer.

8.6 CABLE LADDER RACKS

Only cable ladder racks (and not cable trays) shall be supplied, delivered and installed unless otherwise approved by the Engineer.

All cable ladder racks shall be sized in order to allow twenty percent spare space for future cable installation.

8.7 CABLE ROUTES TO PUMP STATION

The MCC feeder cable route to the pump station is indicated on drawings. All the required cable routes of cables to the pump station are indicated on drawings.

8.8 CABLE SLEEVES

Cable sleeves shall be as specified in STD SPEC: SUPPLY AND INSTALLATION OF CABLE SLEEVES of the Standard Specifications.

9 CABLE TRENCHES

All cable trenches shall be excavated by machine unless otherwise instructed/approved by the Engineer or his representative.

The Contractor shall ensure that the cable trenches are excavated to the specified depth and that the cables are laid with the specified distances as indicated on the standard drawings. Where the cables cross other services the clearances as specified in the STD SPEC: MEDIUM AND LOW VOLTAGE CABLE INSTALLATION shall be maintained. Where the cables cross proposed post office cable routes and other services a concrete slab shall be installed above the cable at the point of crossing of the two services.

The cable trench shall be minimum 450 mm wide and 1 000 mm deep.

10 CABLE ROUTE MARKERS

Cable route markers shall be installed for all cable installed to indicate the cable route and positions of cable joints and cable sleeves. The markers shall be buried in the ground directly over the cable, joint or sleeve or where the cable crosses a known service. Route markers shall be placed at every change of direction of the cable and at 50m intervals on straight runs. Refer to the standard drawing for the detail on the cable marker.

11 EARTHING

In addition to the substation buildings described in the STD SPEC: EARTHING, the scope of this contract shall include the supply, delivery, installation and testing of all material, labour and incidentals to provide an earthing installation for the Tsojana Water Treatment Works as specified below.

11.1 Pump Station:

The earthing installation shall comprise of the following:

(a) Earthing of buildings

All hot and cold water pipes and discharge pipes shall be interconnected by means of 12 x 1,6 mm solid or perforated copper tape and clamped with brass bolts and nuts. Copper tapes shall be fixed to walls by means of brass screws at intervals not exceeding 250 mm.

Iron roofs, gutters, down-pipes, etc., shall be interconnected in the same way. Connections shall be carried out with brass bolts and nuts (not self-tapping screws). Iron roofs shall be connected at intervals not exceeding 15 m with a common earth conductor of bare copper wire. The common earth conductor shall run under the roof over the full length firmly fixed to the upper purlin.

This earth conductor shall also be connected to the main earth conductor of every distribution board. When plastic conduit is used, a 2,5 mm² bare copper conductor shall be installed throughout for earth continuity.

This copper conductor shall be securely fixed to all metal appliances and equipment, including switch boxes, socket outlet boxes, draw boxes, switchboards, luminaires etc.

(b) Earthing of LV Systems

A separate earth connection shall be installed from every sub-distribution board to the earth terminal on the main distribution board. These earth connections shall consist of bare copper conductors, drawn into conduit or piping, together with PVC conductors or cables.

Socket outlets shall be connected with 2,5 mm² earth conductor to the earth busbar in the relative distribution board.

The earth terminals of fluorescent light fittings shall be connected to the nearest earth terminals by means of 2,5 mm² stranded copper conductors. The earth terminals on the main distribution board shall be earthed by means of a 70 mm² bare copper conductor connected to the cold water main.

12. STANDBY GENERATOR

The pump station adjacent the Randwater reservoir shall be equipped with an emergency standby generator supply. The generator installation shall comply with STD SPEC: SUPPLY AND INSTALLATION OF A STANDBY GENERATOR. The requirements below shall take preference in case of contradictions.

12.1 ENCLOSURE

The generating set shall be of the containerised type with a base suitably sized for the set and shall be placed on a concrete plinth as indicated on the drawings. The supply and installation of the concrete plinth and the interconnecting cables and sleeves to the MCC in the pump station shall form part of this contract. To ensure corrosion protection, the generator housing shall be manufactured from 3CR12 grade steel. The housing shall be painted "Admiralty Grey", colour G12 to SABS 1091. It is essential that the correct priming and painting process be used as per STD SPEC: CORROSION PROTECTION.

The enclosure shall be equipped with 24 VDC internal lighting, in order that basic maintenance or repairs may be carried out after dark. Full details of the proposed container construction and finish, as well as the electrical services and equipment placement shall be submitted for approval with the shop drawing submission.

The container and exhaust system shall be of such a design that the maximum allowed sound level at a distance of 1 meter from the exhaust outlet shall be no more than 65dBA.

The container shall be equipped with statutory warning signs on all opening doors. The enclosure shall allow operation of the generator with all doors closed and shall have a minimum rating of IP 55 to SABS 1222.

12.2. PLINTH

A plinth suitably sized for the generating set, constructed of concrete reinforced with Y12 mesh shall be required. Cable sleeves shall be cast-in.

12.3. ALTERNATOR OUTPUT REQUIREMENTS

The emergency power generating set shall be capable of delivering the following output:
PUMP STATION KVA Power Factor

This rating shall be attainable at the alternator's output terminals, at the specified altitude, and in the configuration as specified.

Output shall be 400 V \pm 5% at 50 Hz \pm 5%.

The load is summarised in the MCC Schedules included in this document.

12.4. SYSTEM OPERATION

12.4.1 General

- (a) The change-over unit, from mains (or normal) to emergency power, shall be installed in a separate compartment of the MCC in the pump station
- (b) The change-over equipment shall consist of suitably rated change-over contactors, mechanically and electrically interlocked to prevent the paralleling of the mains and emergency supplies. Refer to the STD SPEC: SWITCHBOARDS AND MOTOR CONTROL CENTRES and standard drawing.
- (c) The control of the change-over contactor sets shall be done by the control circuit as referred to in paragraph (b) above.
- (d) All the alarm conditions on the generator control panel shall be combined and signalled to the MCC alarm surveillance circuit as indicated on schematic diagram and explained in this DETAIL SPECIFICATION.
- (e) These contactors shall change the supply from mains to emergency power and vice versa as per control circuit referred to in paragraph (b).
- (f) This change-over control shall be the responsibility of the MCC manufacturer.

12.4.2 Operation

- (a) Whilst the mains are healthy, the mains contactor in the MCC shall be closed.
- (b) Failure of a phase or failure of the total supply at the MCC shall be detected as per control circuit. The detection circuit shall in case of phase failure or a failure of the total supply, initiate the starting cycle of the Genset, after an adjustable time delay. If the mains supply is restored within the set period, the starting cycle shall be aborted and the control system shall reset to the standby mode.
- (c) The generator control panel shall be equipped with a contactor which shall only close after the generator start signal is received from the MCC and the generator set is on full speed and with all generator variables within limits.
- (d) After successful reverse change-over back to mains supply, the engine shall be run on no-load for a pre-set period. This period shall be controlled by a 0 to 6 minute adjustable timer installed in the generator control panel.
- (e) At the end of the run down period, the engine shall be shut down and the generator control system shall revert to the standby mode.
- (f) Should a mains failure re-occur during the run down period, the run down cycle shall be aborted and the change-over from mains to emergency shall take place as before.

12.4.3 Isolation

Two key-operated switches shall be fitted on the generator control panel, labelled as follows:

(a) Gen Auto Start

This switch shall have two positions. In the *Gen Auto Start* position, the change-over sequence shall operate automatically as described. In the *Gen. Locked Out* position, the change-over sequence shall not be initiated if a mains fail situation occurs. Remote alarm indication (at the MCC) is required if the switch is in the latter position. The key shall be removable in either position.

(b) Simulate Mains Fails

This switch shall have two positions. In the *Simulate* position, a main failure shall be simulated. In the *Normal* position, the system is set to the normal auto standby mode.

12.5. ELECTRONIC GOVERNOR

A Woodward electronic governor must be supplied and installed to ensure accurate speed control of the diesel engine under varying load conditions.

12.6. FUEL TANK

A base frame mounted diesel tank of 300 litre minimum capacity shall be manufactured, supplied and installed in the generator set container. The fuel tank shall be fitted with an alarm, to provide an audible alarm on the generator control panel when the fuel level in the tank drops below 75 litres. Visual indication of the fuel level is also required.

12.7. EXHAUST SYSTEM

The entire section of the exhaust in the container shall be lagged with heat insulating material. Both the exhaust and the silencer shall be manufactured from stainless steel.

The route of the exhaust shall be away from the container and pumpstation building. The exhaust shall be fitted with a drain tap at the lowest point of the exhaust, to allow the draining of water entering the pipe. The exhaust shall be supported independently of the container, on a structure supplied and installed as part of this contract.

12.8. RADIATOR DUCTS AND FLASHINGS

A radiator outlet louvre, complete with flashings, shall be supplied and installed under this contract.

The tenderer shall supply details of radiator outlet louvres with the shop drawing submission. Suitable weatherproof louvres shall be supplied and installed to provide the required air flow to the radiator for cooling purposes.

12.9. GENERATING SET COLOUR

The base frame, tank, diesel engine and alternator shall be provided in the manufacturers' standard colours on condition that a high temperature fuel resistant industrial paint is used.

12.10. GENERATOR CONTROL PANEL

All moulded case circuit breakers and contactors shall be approved by Engineer on the submitted detailed schematic and equipment layout drawings. The Contractor shall submit these drawings prior to commencement of construction and may only continue with construction after written approval of the drawings.

The generator control panel shall have a protection rating of IP4X. An earth bar of 30 mm x 6 mm is required across the width of the control panel above the gland plate. The 2 mm gland plate shall be pre-drilled for the two outgoing cable glands.

The following moulded case circuit breakers shall be supplied and installed in the power compartment of the generator control panel, with full load current and fault rupturing capacity to suit the alternator output rating:

- 1 x Triple pole - label as "GENERATOR OUTPUT"
- 1 x Single pole - label as "BATTERY CHARGER"
- 1 x Single pole - label as "WATER HEATER"

The generator panel will be fed with a cable from the MCC as indicated in the Cable Schedules. The cable shall be used to supply power to the battery charger and to the water heater via the control panel.

The generator change-over control circuit will be controlled in the MCC. Klippon RSF1 terminals, each terminal indelibly labelled, shall be provided for the purpose of control wiring between the MCC and the generator control panel.

All other equipment to be installed in the generator control panel are detailed in STD SPEC: SUPPLY AND INSTALLATION OF STANDBY GENERATOR.

The following pilot lights, with a lamp test facility, shall be provided on the generator control panel:

- Load on normal supply - Green
- Load on emergency supply - Red
- Engine run down cycle - Blue
- Genset in standby mode - Green
- Water jacket heater failure - Amber
- Low fuel level - Amber
- Engine start failure - Red
- Low oil pressure - Red
- Auto-start disabled - Red
- High engine temperature - Red
- Engine over speed - Amber
- Engine under speed - Amber
- Overvoltage - Amber
- Under voltage - Amber

The critical alarms will shut down the engine. The critical (red) and non-critical (amber) alarms shall be wired in series. These two circuits shall each energise a relay.

Each of these relays shall be employed to provide the "generator unhealthy" and "generator fault" alarms on the remote alarm panel.

All timer relays shall be labelled according to their function, for ease of maintenance and future modifications, e.g.

- "Engine run down - Timer T7"; or
- "Mains return delay - Timer T5".

All timers shall be of the Rhomberg Slimline plug-in type.

12.11. BATTERIES

The diesel generator set starting batteries shall be industrial heavy duty size 1213. Batteries shall be supplied complete with charger and battery stand as specified. The charger shall be internally supplied from emergency power while the set is operational, (i.e. mains not available).

12.12. WATER JACKET HEATER

An electrical type water jacket system shall be provided, complete with thermostat, in accordance with the Standard Technical Specifications.

12.13. DUMMY LOAD

A suitably rated 4 step dummy load must be supplied and installed. The load monitoring circuit shall select the load in any of four steps, 30%, 15%, 10%, and 5% of the generator rated output. Bypass selector switches must also be provide to enable the manual selection of any of the four step loads.

The dummy load will only be connected 5 minutes after start-up. Four amber indicators (one per bank) labelled "bank 'x' connected" shall be provided. Preference shall be given to generator systems where the dummy load is an integral part of the radiator cowl and is cooled by the radiator fan.

The dummy load controller shall automatically select the required combination of steps, depending on the load.

12.14. GAUGES

All gauges, i.e. water temperature, oil pressure, battery voltage, battery charge rate and frequency, shall be provided with engraved labels, indicating the "normal" parameters of

each gauge. The exact information to be engraved shall be determined upon commissioning of the installation.

12.15. ELECTRIC FUEL PUMP

A one litre per second electric fuel pump must be provided at the generator to enable the fuel tank to be filled from any outside fuel storage facility. The electric pump shall be fed from the generator control panel with emergency power. The pump shall be activated by means of pushbutton "push to operate" control. This pushbutton shall be installed within sight of the fuel tank visual level indicator.

The electric pump shall be fitted with a 25 mm Ø 10 m fuel compatible suction hose. A cartridge type fuel filter shall be provided between the above-mentioned electric pump and the tank.

12.16. COMMISSIONING AND TESTING OF THE GENERATOR SET

12.16.1 Testing

Before delivery to site, the engineer or his representative shall be invited to witness tests at the manufacturer's premises. Tests shall be carried out in accordance with BS 5514, to prove that the equipment will deliver the specified output.

Suitable test gear shall be provided at the manufacturer's premises in order to simulate and prove all aspects of the change-over system as specified.

All protective devices and systems shall be fully tested. Injection tests shall be performed to check and test all metering equipment.

The making available of all equipment, plant and instruments required for the testing and commissioning shall form part of this contract.

On site, tests shall be a repetition of the above and shall also be performed in the presence of the engineer or his representatives. The contractor shall provide all the test equipment and instruments which may be necessary. Load tests are to be done on both occasions.

Copies of the test reports for the above tests shall be submitted to the engineer, and shall be included in the maintenance manuals.

12.16.2 Commissioning

All items shall be pre-checked by the contractor, prior to commissioning. Copies of the results of all pre-checks, as well as a detailed commissioning procedure for each piece of equipment, shall be presented to the engineer for approval *before* commissioning takes place. Note that the engineer will not commission the system or any part thereof on behalf of the contractor. All commissioning shall be performed by the contractor, to the satisfaction of the engineer. Commissioning will be witnessed by the engineer.

12.17 MAINTENANCE AND OPERATING MANUALS

The contractor shall prepare and provide comprehensive maintenance and operating manuals for the Genset in its entirety, in accordance with the standard specifications and comprising the following:

12.17.1 Pre-start checks

These checking procedures shall include pre-start-up checks on batteries, fuel pipes, fuel levels, lubrication oil levels, coolant levels, alarm indicator lamps and settings of key operated switches and timer relays.

12.17.2 Operating instructions

The function of each switch or control device shall be detailed. Manual or automatic operation settings and procedures shall be detailed.

12.17.3 Alarm indication

All alarm conditions and remedies to restore these conditions shall be detailed.

12.17.4 Fault finding

Detailed, logical fault finding procedures, together with readings to be expected for all possible fault conditions, shall be detailed.

12.17.5 Wiring diagrams

Detailed wiring diagrams, complete with cable wire and core numbering as well as terminal block and relay numbering shall be provided.

12.17.6 Engine and alternator information

Relevant detail regarding engine and alternator specifications, lubricants required, recommended service intervals, detailed service procedures, spares lists and dealer network information shall be provided.

12.17.7 Test sheets and certificates

Copies of all works test sheets and type test certificates for all items shall be provided. The contractor's attention is drawn to the following:

- (a) A draft operating and maintenance manual shall be submitted to the engineer for approval at least *3 weeks before* the anticipated handing over date.
- (b) The contract will not be regarded as complete until all requirements in this regard have been met.

12.18 TRAINING OF AN OPERATOR

After the installation has been commissioned, the contractor shall train an appointed person to operate and control the generating set. The cost of training shall be included in the tender price. The training procedures shall be submitted to the engineer in writing. After completion of the training period, the trainee will be evaluated by the engineer.

12.19 MAINTENANCE CONTRACT

The tenderer shall submit with his tender details, a pro forma contract for maintaining the generating set *after* the initial full maintenance period of 1 year has expired.

The following minimum information shall be provided:

12.19.1 Price for annual maintenance agreement.

12.19.2 Service interval details.

12.19.3 Pro-forma maintenance contract.

12.19.4 Number of competent personnel available to maintain the system.

12.19.5 Spare holding.

12.19.6 Response time.

12.20 HANDING OVER

A full tank of diesel shall be provided for the generator by the contractor on hand-over of the completed works, i.e. after site testing and commissioning to the client.

13 OPERATING AND MAINTENANCE MANUALS

Further to the requirements of the Operation and Maintenance manuals as specified in Section 1 of Part B: Standard Specifications, paragraph 1.19, the following requirements shall apply. Where these requirements contradicts the requirements in Section 1 of Part B the requirements as specified below shall take preference.

Three (3) copies of the Operating and Maintenance manuals shall be provided on delivery of the plant and equipment. These shall come in the form of plastic covered ring files with

the information as detailed in Annexure 4 indelibly printed on their covers. Other specific requirements were also detailed in Annexure 4.

Sections of the work will be completed and commissioned at various stages throughout the contract period. A partial O&M manual shall be compiled for each section of the work completed which shall be submitted to the Engineer for comments four weeks prior to start of commissioning.

At the end of the contract period all the partial O&M manuals shall be combined in a final O&M manual. The draft copy of the final combined O&M manual shall be submitted to the Engineer eight weeks prior to the milestone date on which the final combined O&M manuals are due.

14. OVERHEAD POWER LINE

14.1 RELEVANT ACTS, REGULATIONS AND STANDARDS

All work and materials shall comply with the terms and directions of the latest amendment or addition of the following:

- (a) Occupational Health and Safety Act, 1993 (Act No 85 of 1993), and Regulations of the Republic of South Africa.
- (b) Post Office Act No 44 of 1958 and the requirements of the Department of Posts and Telecommunications.
- (c) Electricity Act, No 41 of 1987 of the Republic of South Africa.
- (d) The Code of Practice for Overhead Powerlines for Conditions Prevailing in South Africa.
- (e) SABS and BS supporting specifications.

14.2 SABS AND BS STANDARDS

(a) SABS

- 135 : Isometric black hexagon and square bolts, screws, nuts
- 763 : Hot dip galvanizing
- 784 : Busbar and busbar connections
- 833 : High and low voltage bushings
- 1186 : Industrial safety signs
- 1091 : Colours
- 152 : Low voltage airbreak switches
- 166/167: Insulators for lines
- 178 : Insulator and conductor fittings
- 182 : Aluminium conductors, steel reinforced, for overhead power and transmission lines
- 177 : Ceramic and glass insulators for overhead lines of nominal voltage greater than 1000 V
- 161 : Low voltage porcelain insulators
- 171 : Low voltage lightning arrestors
- 753 : Pine poles and cross-arms for power transmission, low voltage and telephone systems
- 754 : Eucalyptus poles and cross-arms for power transmission, low voltage and telephone system

(b) BS

- 2569 : Zinc metal spraying
- 4360 : Weldable structural sheets
- 5135 : Metal arc welding of carbon steels
- 162 : Electric power switchgear and associated apparatus
- 3078 : Isolators
- 223 : Isolator bushings
- 381C : Colours for specific purposes
- 6004 : Underground cables

137 : Insulators for lines
3288 : Insulator and conductor fittings

14.3 FACTORS OF SAFETY

Each structure used on this project shall have the following factors of safety:

- (a) Wooden structures not continually loaded 3,5
- (b) Wooden structures continually loaded 5,5
- (c) Line conductors, based on ultimate strength 3,0
- (d) Insulator units including caps and pins based on minimum working load 3,0

The structures shall furthermore have a factor of safety of 1,5 under a broken conductor condition. No failure or permanent distortion shall occur to any structure when subjected to a load equivalent to 1,5 the maximum unbalanced load due to a broken conductor condition.

A broken conductor condition shall be assumed when any one conductor breaks without restriction as to the span in which the condition occurs.

14.4 CLEARANCES

The minimum clearances of the conductors of the powerlines shall be the following:

| | | |
|--|-------------|--------|
| • Maximum voltage, kv rms clearance phase to phase | 1,1 or less | 12 |
| • Minimum safety clearance | | 0,20 m |
| • Above ground outside townships | 4,9 m | 5,1 m |
| • Above ground in townships | 5,5 m | 5,5 m |
| • Above roads in townships, proclaimed roads outside townships and railways | 6,1 m | 6,3 m |
| • To communication lines, other powerlines or between powerlines and cradles | 0,6 m | 0,8 m |
| • To buildings, poles and structures not forming part of the powerline | 3,0 m | 3,0 m |

14.5 MAXIMUM AND MINIMUM WORKING CONDITIONS

The following maximum and minimum working conditions shall be used:

- Minimum temperature of line and earth conductor - 5°C
- Maximum temperature of line and earth conductor 75°C
- Wind pressure per square metre on whole projected area of line conductors 430 N/m²
- Wind pressure per square metre on 1½ times projected area of one face of structures 720 N/m²

14.6 CROSSING OF SERVICES

The following further conditions shall apply when crossing a proclaimed road, communication line and a railway line:

- (a) Structures supporting crossing spans shall be so located that they will not touch the service crossed should the structure overturn
- (b) One structure supporting a crossing shall be placed as close as possible to the service crossed taking the aforementioned condition into consideration
- (c) The deviation from a right angle when crossing a communication line shall not be greater than 30°
- (d) A clearance of 4,5 m shall be maintained in the span crossing a proclaimed road when a broken conductor condition occurs in any other span than the crossing span
- (e) No joints shall be made in a span crossing a service.

14.7 MATERIALS

(a) Conductor types

MV conductors

The line conductors shall consist of Aluminium Conductor Steel Reinforced "ACSR" conductors.

The standard British size ACSR conductor "Squirrel" shall be used. The steel-core wires shall be preformed so that they remain inert and do not move relative to each other when cut. The aluminium used for the conductors shall be of the highest purity available. The stranding of each layer of the conductor shall be as close as possible with a right handed outer layer.

No joints shall be allowed in individual wires of a standard drum length. The conductors shall be supplied wound onto drums constructed of approved material in accordance with BS 1559. The exact length of the conductor with an arrow indicating the correct direction of rolling must be marked on all conductor drums.

(b) Insulators

All insulators shall be suitable for a system with a nominal voltage of 22 kV. Insulators together with their fittings shall comply with SABS 177, as specified and where specified shall offer a high resistance to damage, caused by malicious vandalism. Insulator material shall be high grade porcelain. As an alternative cycloaliphatic resin insulators shall be used where specified.

Line post, Class A insulators shall be used as an alternative insulator to the pin insulator where specified. Line post insulators shall be of the capless, solid-core type. Line post insulators shall be puncture proof, radio interference free and shall display superior performance in polluted environments. They shall have a basic insulation level of 170 kV.

Long rod, Class A insulators shall be used in all crossarms for the high voltage strain, terminal and pole mounted transformer structures. The porcelain long rod insulator shall be absolutely puncture proof and of the type as specified in the Detail Specification.

(c) Joints

The Contractor shall, where possible, order the conductor lengths so that there are no joints in any of the spans and that the jointing of conductors only takes place at termination structures.

Where joints are to be used the joints shall be of the compression type which shall have a mechanical strength of not less than 99% of the ultimate strength of the conductor when tested in accordance with BS 3288 Part 1 of 1973.

The electrical conductivity and current carrying capability of the joint shall not be less than that of the conductor.

During assembly of a joint, there must be no possibility of relative movement between individual layers of the conductor.

(d) Hardware and fittings

All cast iron and steel fittings and hardware shall be manufactured in compliance with SABS 178-1970 where applicable and shall be hot-dipped galvanised to SABS 763-1966. No drilling, screw tapping or cutting of hardware and fittings shall be permitted after galvanising.

Eye bolts used for the strain and terminal structures shall be manufactured from mild steel and shall have a minimum failing load of 70 kN. The bolt size shall be of diameter indicated on the drawings with length to suit and the diameter of the eye and the eye material shall suit the dimensions of the shackle to be used.

D-shackles shall be manufactured from forged steel and shall have a minimum failing load of 70 kN. The dimensions thereof shall suit the clevis of the insulators to be used.

The strain clamps shall be manufactured from malleable cast iron to BS 310 and shall have a minimum failing load of 70 kN. The dimensions of the clevis of the clamp shall be suitable for the tongue of the insulators to be used.

Intermediate pole conductor binding shall be effected by means of preformed wire ties. The ties shall be secured against unravelling by an approved stainless steel security band. Tension fittings shall be the preformed wire type together with suitable fittings for securing the tension insulators.

Tension insulator sets and fittings shall, unless otherwise approved, be ranged to give a minimum clearance of 150 mm between the jumper conductor and the rim of the live end insulator units. Tension sets shall be fitted with attachment plate to enable the load on the tension set to be relieved for maintenance purposes. Fittings made of steel or malleable iron shall be galvanised as specified to prevent corrosion.

All bolts and nuts shall be as specified and unless otherwise approved shall be locked by means of locknuts.

Split pins used on all insulator fittings shall be of stainless steel or other approved material and shall be backed by washers. Hump backed split pins shall not be used.

Two bolt parallel groove clamps of approved quality shall be used at jumper connections. The clamps not allow any slip or deterioration of the jumper connection at a load of less than 50 % of the ultimate strength of the conductor, and shall be designed so that loosening of the jumper connection is not possible in service.

(e) Steel crossarm

The steel crossarms for the mounting of the expulsion fuses shall be manufactured from 1,6 metre 75 mm channel iron.

The steel crossarms for the mounting of the transformer shall be manufactured from 100 mm steel channel iron as indicated on the detail thereof on the drawings.

(f) Expulsion fuses

The expulsion fuses shall comprise of three single pole spring loaded units suitable for mounting on a galvanised steel crossarm. Each unit shall consist of:

- (i) Galvanized mounting brackets complete with fixing bolts
 - (ii) Insulator assembly manufactured from high quality glazed porcelain
 - (iii) Spring loaded contact assembly. Positive spring action shall cause the ejection of the fuse holder from its contact point under fault conditions.
 - (iv) Fuse holder consisting of an insulated cartridge and the fuse element.
- The minimum fault clearance level of the fuse cutout shall be 200 kVA.

(g) Surge arrestors

Medium voltage surge arrestors shall be of the metal-oxide type and shall have a nominal rating as specified. The arrestors shall include galvanised brackets for their mounting adjacent to the transformer's MV bushings.

(h) Identification and danger plates

Conspicuous danger plates shall be fixed on all suspension and strain structures. The inscription and background of danger plates shall be vitreous enamel and the plate must be completely covered to prevent corrosion. Pressed aluminium plates shall be used for pole numbering.

14.8 DETAIL REQUIREMENTS

14.8.1 MV powerlines

New medium voltage powerlines as indicated on Drawing No 60279/T/19 shall be erected at the Melody plots. The existing overhead line material shall be removed and shall be handed over to the Council.

The structures as specified in Section 14.8.5 shall be erected. The Contractor shall supply all the structure materials.

14.8.2 Cable trenches

The contractor shall ensure that the cable trenches are excavated to a depth of 1m deep and 450mm wide. Where cables cross proposed Telkom cable routes and other services, a concrete slab shall be installed above the cable at the point of crossing of the two services.

14.8.3 Circuit breaker boxes

Where existing circuit breaker boxes need to be replaced, the new circuit breaker boxes will be manufactured from 3 CR12 stainless steel material. The circuit breaker boxes shall be waterproof and the sizes will be determined on site. A proper drawing will be submitted for approval by the Engineer before construction of the boxes takes place.

14.8.4 Pole Numbering

All poles of the electrical 22 kV overhead network need to be numbered.

The applicable line codes to be used for the various OHL sections will be communicated to the contractor at the start of construction.

Wood poles will be numbered by means of punching 25 x 100 mm aluminium plates and nailing it to the poles. These plates must be visible from the nearest street.

14.8.5 Structures

Three phase powerlines

The following wood structures will be erected as part of this contract:

a) MV T-off from intermediate (Vertical)

15. MEASUREMENT AND PAYMENT

Item Unit

C.15.1 Supply, deliver, install and commission remote control panel No

The unit of measurement shall be the number of remote control panels supplied, delivered, installed and commissioned.

The tendered rate shall include full compensation for the supply, delivery, installation and commissioning of remote control panels as specified in the detail specification and shall include all required installation materials, terminal rails, terminals, mounting brackets, internal chassis plate etc to the approval of the Engineer.

Item Unit

C.15.2 Testing, reporting and Re-commission of existing electrical installation L/Sum

The tendered lump sum shall include full compensation for the supply of all the material required to re-commission the existing MCC installation. The tendered sum shall furthermore include for the testing of the MCC installation and the submission of the test results to the engineer.

Item Unit

C.15.3 Supply and deliver flowmeter

No

The unit of measurement shall be the number of flowmeters supplied and delivered. The tendered rate shall include full compensation for the supply and delivery to site of the specified flowmeter as specified including all required material to render a complete and operational installation.

Item Unit

C.15.4 Install, test and commission flowmeter

No

The unit of measurement shall be the number of flowmeter installed, tested and commissioned. The tendered rate shall include full compensation for the installation, testing and commissioning of the specified flowmeter to render a complete and operational installation as specified.

Item Unit

C.15.5 Site de-establishment

No

The unit of measurement shall be the number of times the Contractor has to de-establish site.

The tendered rates shall include full compensation for all costs applicable to temporarily deestablish site due to a delay outside the Contractor's control and in the event that there is no other work the Contractor can do on site during the delay or as instructed by the Engineer.

Item Unit

C.15.6 Site re-establishment

No

The unit of measurement shall be the number of times the Contractor has to re-establish site.

The tendered rates shall include full compensation for all cost applicable to re-establish site after having to de-establish site for a period of time of less than a week.

Item Unit

C.15.7 Time related charges while the site is de-established

Weeks

The unit of measurement shall be the number of weeks falling outside the manufacturing period the Contractor has to de-established site.

The tendered rates shall include full compensation for the reduced time related charges during the period the site has to be de-established, which period shall fall outside the manufacturing period. The tendered rate shall include full compensation for the specified minimum campsite requirements and for providing the necessary security on site during the de-established period as well as the required material and equipment maintenance (i.e turning of motors and gearboxes etc.) to ensure that all equipment is maintained in an as new condition until commissioning and hand-over.

C.15.10 Supply and install earthing and bonding for the installation

Sum

The tendered lump sum shall include full compensation for the provision of all material required for the earthing and bonding of the installation in accordance with SABS 0142.

Item Unit

C.15.11 Supply and install earthing for substations

Lump Sum

The tendered lump sum shall include full compensation for the supply of all the material

required to earth the substations and the installing of the substation earthing. Separate items shall be schedule for the different earthing installations.

The tendered sum shall furthermore include for the testing of the earthing installation and the submission of the test results to the engineer.

Item Unit

C.15.12 Testing of the earth installation by a specialist contractor Lump Sum

The tendered lump sum shall include full compensation for the testing of the earth installation by a specialist contractor when specified in the detail specification.

Item Unit

C.15.13 Supply and install 22kV surge arrestors No

The unit of measurement shall be the number of surge arrestors supplied. The tendered rate shall include full compensation for the supply and installation of the surge arrestors. The arrestors shall include galvanised brackets for their mounting adjacent to the transformer's MV bushings. Medium voltage surge arrestors shall be of the metal-oxide type and shall have a nominal rating as specified.

Item Unit

C.15.14 Supply, deliver and install power and signal cables Lump Sum

| Description | Length (m) | Area (mm ²) | Voltage Drop (%) |
|-------------------------------------|---------------|----------------------------|------------------------|
| Submersible pump station (internal) | 10 | | |
| Submersible pump station (external) | 30 | | |
| Drywell pump station (internal) | 10 | | |
| Drywell pump station (external) | 30 | | |

The unit of measurement shall be the linear length supplied, delivered and installed. The tendered rate shall include full compensation for the supply, delivery and installation to site of the as described in above as would be specified by the contractor. Cables will be measured linearly along the full length installed in the wireway and sufficient provision will be made in the quantities. No extra will be allowed for jointing, overlapping and wastage at connections.

Item Unit

C.15.15 Supply and deliver bare copper conductors Lump Sum

The unit of measurement shall be the linear length supplied and delivered. The tendered rate shall include full compensation for the supply and delivery to site of the specified conductors. Conductors will be measured linearly along the full length installed in the wireway and sufficient provision will be made in the quantities for conductor slack at outlet boxes and distribution board trays. No extra will be allowed for jointing, overlapping and wastage at connections. Separate items shall be scheduled for each size.

Item Unit

C.15.16 Supply and deliver bare copper earth conductors

Lump Sum

The unit of measurement shall be the linear length installed in conduit.

The tendered rate shall include full compensation for the handling, inspection, pulling in conduit the specified number and sizes of conductors, cutting and testing of the conductors. Sufficient provision will be made in the quantities for slack at outlet boxes and distribution board trays to make the necessary connections to equipment. Separate items shall be scheduled for each size.

Item Unit

C.15.17 Earthing of structures

No

The unit of measurement shall be the number of structures earthed.

The tendered rate shall include for the supply of all material required, the excavation of trenches, 1 000mm in depth and the installation of a crow foot earth comprising of:

- > 25mm² PVC insulated copper conductor installed down the pole structure and 5 metres from the pole (length \pm 15 metres).
- > 3 metres of 25mm² galvanised kick pipe fixed to the bottom of pole (0,5 m below ground level and 2,5 m above ground level) at 500 mm centres by means of band-it straps and buckles.
- > Three 25mm² stranded copper conductors, 5 metres in length, installed radially 90° apart from the end of the insulated earth conductor.
- > Four 1,8 metre copper earth rods installed at the end of the 25mm² insulated earth conductor at the end of each radial conductor.
- > One 7 kV neutral surge arrestor.

Separate earths shall be installed for the MV and LV earthing of transformers.

Item Unit

C.15.18 Supply, deliver, string and terminate ACSR conductor

metre

The unit of measurement shall be the length in metres of ACSR conductor supplied, delivered, stringed and terminated.

The tendered rate shall include full compensation for supplying, delivering and terminating stringing the conductor and shall include for temporary staying any of the structures during the stringing operation, terminating the conductors on the strain structures and fastening the conductors on the suspension structures.

Item Unit

C.15.19 Supply transformer circuit breaker box

No

The unit of measurement shall be the number of transformer circuit breaker box supplied. The tendered rate shall include full compensation for the supply of the circuit breaker box and circuit breakers as specified including all hardware required for fixing the box.

Item Unit

C.15.20 Install transformer circuit breaker box

No

The unit of measurement shall be the number of transformer circuit breaker box installed. The tendered rate shall include full compensation for the installing of the circuit breaker box including the specified circuit breakers.

Item Unit**C.15.21 Supply identification and danger signs****No**

The unit of measurement shall be the number of identification and danger signs supplied. The tendered rate shall include full compensation for the supply of the identification and danger signs.

Item Unit**C.15.22 Install identification and danger signs****No**

The unit of measurement shall be the number of identification and danger signs installed. The tendered rate shall include full compensation for the installing of the identification and danger signs.

The tendered rate shall include the supply, delivery, off-loading and handling of the MVcable on site.

Item Unit**C.15.23 Supply and install pole numbers****No**

The unit of measurement shall be the number of poles numbered. The tendered rate shall provide for all material (aluminium plates and nails for wooden poles) and paint (for concrete and steel poles) necessary to number the various pole types as specified.



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PROJECT SPECIFICATIONS

PART C PROVISION OF THE TEMPORARY WORKFORCE

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- C 02 INTERPRETATIONS
- C 03 PERMITTED SOURCES OF TEMPORARY WORKERS
- C 04 EMPLOYMENT RECORDS TO BE PROVIDED
- C 05 VARIATIONS IN WORKER PRODUCTION RATES
- C 06 TRAINING OF THE TEMPORARY WORKFORCE
- C 07 RECRUITMENT AND SELECTION PROCEDURES
- C 08 TERMS AND CONDITIONS PERTAINING TO THE EMPLOYMENT OF THE TEMPORARY WORKFORCE
- C 09 LABOUR RELATIONS AND WORKER GRIEVANCE PROCEDURES
- C 10 THE SUBCONTRACTORS' WORKFORCES
- C 11 MEASUREMENT AND PAYMENT

C 01 SCOPE

This Specification covers the provisions and requirements relating to the provision of the temporary workforce.

C 02 INTERPRETATIONS

C 02.01 Supporting documents

The Tender Rules, Conditions of Contract, Standard and Project Specifications, Drawings and statutory minimum requirements relating to the employment and remuneration of labour shall *inter alia* be read in conjunction with this Specification.

C 02.02 Definitions and abbreviations

For the purposes of this specification, the definitions given in the Conditions of Contract, the Standard Specifications and the Project Specifications, together with the following additional definitions shall, unless the context dictates otherwise, apply:

- (a) "Key Personnel" means all contracts managers, site agents, materials and survey technicians, trainers, supervisors, foremen, skilled plant operators, artisans and the like, and all other personnel in the permanent employ of the Contractor or Subcontractor who possess special skills and/or who play key roles in the Contractor's or Subcontractor's operation
- (b) "Project Committee" means a committee consisting of the Employer, the Engineer, the Contractor, (or their nominated representatives) as well as representatives of the temporary workforce, which is convened from time to time at the discretion of the Engineer, for the purposes of acting as an avenue for effective communication and liaison between all the parties referred to, in all matters pertaining to the Contract
- (c) "Subcontractor" means any person or group of persons in association, or firm, or body corporate (whether formally constituted or otherwise) not being the Contractor, to whom specific portions or aspects of the Works are sublet or subcontracted by the Contractor in accordance with the provisions of the Contract
- (d) "Worker" for the purposes of this Specification means any person, not being one of the Contractor's key personnel, nor any key personnel of any Subcontractor, who is engaged by the Contractor, a Subcontractor or the Employer to participate in the execution of any part of the Contract Works and shall include unskilled labour, semi-skilled and skilled labour, clerical workers and the like
- (e) "Workforce" means the aggregate body comprising all workers and shall, unless the context dictates otherwise, include the workforces of the Contractor and all Subcontractors

- (f) "Liaison Officer" means a representative from the temporary workforce, duly elected by them, to act on their behalf and through whom all matters pertaining to the temporary workforce can be channelised.

C 02.03 Status

C 04 EMPLOYMENT RECORDS TO BE PROVIDED

- (a) The Contractor shall maintain accurate and comprehensive records of all workers engaged on the Contract and shall provide the Engineer at monthly intervals from the commencement of the Contract, with interim records substantiating the actual numbers of employment opportunities that shall have been generated to date and the amounts actually paid in respect thereof. Such interim records shall be in a format approved by the Engineer.
- (b) The Contractor shall, on completion of the Contract, and as a pre-requisite event to the release of any retention money in terms of the Conditions of Contract, provide the Engineer with copies of the Terms of Employment as well as independently audited documentary evidence of the total number of temporary and permanent employment opportunities actually generated during the Contract.

C 05 VARIATIONS IN WORKER PRODUCTION RATES

Notwithstanding anything to the contrary as may be stated in or inferred from any other provision of this Contract, the Contractor shall not be entitled to any additional payment or compensation whatever, in respect of any differences as may result between the production rates actually achieved by workers in the course of the execution of the Contract Works and those production rates on which he has based his tender.

C 06 TRAINING OF THE TEMPORARY WORKFORCE

- (a) Selected members of the workforce are to be provided with structured training in accordance with the provisions of Part D.
- (b) The Contractor shall make all necessary allowances in his programme of work to accommodate and facilitate the delivery of such structured training and shall comply fully with the requirements of Part D.
- (c) The provision of structured training as described in Part D shall not relieve the Contractor of any of his obligations in terms of the Conditions of Contract and the Contractor shall remain fully liable for the provision, at his own cost, of all training of the workforce, additional to that as provided for in Part D, as may be necessary to achieve the execution and completion of the works strictly in accordance with the provisions of the Contract.

C 07 RECRUITMENT AND SELECTION PROCEDURES

C 07.01 The Contractor shall be fully responsible for the recruitment and selection of workers to constitute the temporary workforce.

C 07.02 The Contractor shall advise the Engineer in writing of the numbers of each category of temporary worker which he requires, together with the personal attributes which he considers desirable that each category of worker shall possess (taking due cognisance of the provisions of the Contract relating to training).

C 07.03 The Contractor shall, at his own cost, take all necessary actions to advertise within the communities comprising the personnel resources, the fact that temporary employment opportunities exist and the time and place where recruiting will occur.

C 07.04 The Contractor shall record in writing, the details of all persons applying for employment, including *inter alia*:

-
- (a) Name, address, age and sex
 - (b) Marital status and number of dependants
 - (c) Qualifications and previous work experience (whether substantiated or not)
 - (d) Period since last economically active
 - (e) Preference for type of work or task.

C 07.05 The Contractor shall make his selection of workers from amongst the applicants, taking due cognisance of his requirements for the workforce and the provisions of the contract in regard to the provision of training to the workforce and in accordance with the following principles:

- (a) No potential temporary worker shall be precluded from being employed by the Contractor on the execution of the Works, by virtue of his lack of skill in any suitable operation forming part of the Works, unless -
 - (i) all available vacancies have been or can be filled by temporary workers who already possess suitable skills, or
 - (ii) the Time for Completion allowed in the Contract, or the remaining portion of the Contract Period (as the case may be) is insufficient to facilitate the creation of the necessary skills.
- (b) Preference shall be given to the unemployed and single heads of households.
- (c) The Contractor shall, in so far as is reasonably practicable, give priority to accommodating the applicants' expressed preferences regarding the types of work for which they are selected.
- (d) The selection process shall not be prejudicial to youth (over the age of fifteen years) and women.

C 07.06 After making his selection, the Contractor shall advise the Engineer thereof, in writing and the Engineer shall, without undue delay, ratify the Contractor's selection.

C 07.07 The provisions of this clause shall apply *mutatis mutandis* in respect of the selection of additional or replacement members of the workforce as may be necessary from time to time during the Contract.

C 07.08 The Contractor shall, after selecting his temporary workforce, arrange at his own cost for the appointment of the Liaison Officer as representative of the workforce to act on their behalf with regards to all matters pertaining to the workforce."

C 08 TERMS AND CONDITIONS PERTAINING TO THE EMPLOYMENT OF THE TEMPORARY WORKFORCE

C 08.01 All temporary workers engaged in accordance with the provisions of Part A of the Project Specifications, shall be employed on the terms and conditions of employment as are consistent with those as set out in this Contract. The Contractor shall implement and adhere strictly to such terms and conditions relating to the employment of the temporary workforce, and subject only to the provisions of this Contract, shall not employ any temporary worker on terms and conditions which are less favourable to the worker or inconsistent with the standards and norms generally applicable to temporary workers in the Civil Engineering Industry and applicable to the particular area.

C 08.02 The Contractor shall pay to all temporary workers engaged in terms of Part A of the Project Specifications, not less than the minimum rate of remuneration as specified in Form P : Appendix to Tender.

C 09 LABOUR RELATIONS AND WORKER GRIEVANCE PROCEDURES

C 09.01 The Contractor, as the Employer of the workforce, shall be fully responsible for the establishment and maintenance at his own cost, of satisfactory labour relations on site and the resolution of all grievances of temporary workers as may occur.

C 09.02 The Contractor shall at all times adhere to the accepted norms and standards of labour relations prevailing generally in the Civil Engineering Construction Industry and shall conduct himself in a fair and reasonable manner, within the constraints as may be imposed upon him by the terms of the Contract.

C 09.03 In the event of any temporary worker engaged by the Contractor in terms of the Contract, being aggrieved with regard to his Terms of Employment, working conditions and training, he shall have the right, at his discretion, to be supported in any inquiry or disciplinary hearing or investigation instituted by the Contractor in terms of Subclause C 09.02 above, by one member of the temporary workforce and one member of the Project Committee, which persons shall be nominated by the worker.

C 09.04 In the event of any grievance not being satisfactorily resolved through the application of normal dispute resolution procedures in accordance with Sub clauses C 09.02 and C 09.03, then either the Contractor or the worker concerned may require that the matter be referred to the Project Committee for further consideration, with a view to facilitate the resolution thereof.

C 10 THE SUBCONTRACTORS' WORKFORCES

C 10.01 The provisions of this Part C shall apply *mutatis mutandis* to the workforces employed by all subcontractors engaged by the Contractor and the Contractor shall be fully responsible for ensuring, at his own cost, that the terms of every subcontract agreement entered into are such as to facilitate the application of these provisions in respect of the workforces of all subcontractors.

C 10.02 The Contractor shall at his own cost and to the extent necessary, assist and monitor all subcontractors in the application of the provisions of this Specification, and shall, in terms of the Conditions of Contract, remain fully liable in respect of the acts, omissions and neglects of all subcontractors, in respect of the application of the provisions of this Specification.

C 11 PROJECT LIAISON OFFICER (PLO)

The contractor or his appointed agent will appoint a Project Liaison Officer (PLO) after consultation with the local communities, the engineer and the employer. The contractor shall direct all his liaison efforts with the local communities through the appointed officer. The contractor shall, however, accept the appointed as part of his management personnel.

C 11.01 Duties of the Project Liaison Officer

The Community Liaison Officer's duties will be:

- (i) To be available on site daily between the hours of 8h00 and 17h00 and at other times as the need arises. His normal working day will extend from 8h00 to 13h00 in the morning until 14h00 to 17h00 in the afternoon.
- (ii) To determine, in consultation with the contractor, the needs of the temporary labour for relevant skills training. He will be responsible for the identification of suitable trainees and will attend one of each of the training sessions.
- (iii) To communicate daily with the contractor and the engineer to determine the labour requirements with regard to numbers and skill, to facilitate in labour disputes and to assist in their resolution.
- (iv) To assist in and facilitate in the recruitment of suitable temporary labour and the establishment of a "labour desk".
- (v) To attend all meetings in which the community and/or labour are present or are required to be represented.
- (vi) To assist in the identification, and screening of labourers from the community in accordance with the contractor's requirements.
- (vii) To inform temporary labour of their conditions of temporary employment and to inform temporary labourers as early as possible when their period of employment will be terminated.

- (viii) To attend disciplinary proceedings to ensure that hearings are fair and reasonable.
- (ix) To keep a daily written record of his interviews and community liaison.
- (x) To attend monthly site meetings to report on labour and RDP matters.
- (xi) All such other duties as agreed upon between all parties concerned.
- (xii) To submit monthly returns regarding community liaison in a format prescribed by the engineer.

C 11.02 Payment for the project liaison officer

A special pay item is incorporated in section 1200 of the bill of quantities relating to payment of the liaison officer on a prime cost sum basis. This payment shall only be made for the period for which the duties of the liaison officer are required and not necessarily for the full duration of the contract. The remuneration of the PLO shall be determined jointly by the contractor, engineer and employer.

C 11.03 Period of employment of the project liaison officer

The period of employment of the community liaison officer shall be as decided upon jointly by the contractor, engineer and employer.

C 12 MEASUREMENT AND PAYMENT

The Contractor will not be separately reimbursed or compensated in respect of the provision of the workforce and creation of temporary employment opportunities and all the Contractor's costs associated with compliance with the provisions of this part of the Project Specifications shall, except to the extent provided for as relevant, be deemed to be included in the rates tendered for in Section 1300 of the Bill of Quantities.

| Item | Unit |
|--|---------------------|
| C12.01 Project Liaison | |
| (a) Project Liaison Officer(s) | Prime cost (PC) sum |
| (b) Project Liaison Committee | Prime cost (PC) sum |
| (c) Contractor's charge to allow for handling costs and profit in respect of subitem C12.01(a) and (b) | percentage (%) |
| Payment under the Prime cost (PC) sum provided in subitem C12.01(a) and (b) to cover the employment and remuneration of the Project Liaison Officer(s) and the attendant members of the Project Liaison Committee established by the Contractor, shall be effected in accordance with the provisions of Clause 45.2 of the General Conditions of Contract. | |
| The tendered percentage in subitem C12.01(c) is the percentage of the amount actually spent under subitem C12.01(a) and (b) that will be paid to the contractor in full compensation for the contractor's handling costs and profit in respect of the employment and remuneration of the Liaison Officer(s) and Liaison Committee. | |



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PROJECT SPECIFICATIONS

PART D: PROVISION OF STRUCTURED TRAINING

PROJECT SPECIFICATIONS

PART D: PROVISION OF STRUCTURED TRAINING

CONTENTS

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| D 06 | MEASUREMENT AND PAYMENT |

D 01 SCOPE

This specification covers the requirements for the provision of the following training:

- (a) Specified structured training to selected members of the workforce and small, medium and micro enterprises (SMME's) by a selected subcontractor as accepted by the Employer in terms of Clause 9 of the General Conditions of Contract.
- (b) Additional training deemed necessary by the Contractor, to members of the workforce and small, medium and micro enterprises (SMME's).

D 02 INTERPRETATIONS

D 02.1 Supporting documents

The tender rules, conditions of contract, standard, supplementary and specific specifications and project specifications and drawings shall *inter alia* be read in conjunction with this specification.

D 02.2 Application

The provisions of this specification shall apply in respect of all workers and small, medium and micro enterprises other than the Contractor's key personnel, who are engaged on the execution of the works.

D 03 ENGINEERING SKILLS TRAINING

D 03.1 The Contractor shall, from the commencement of the contract, implement a structured training programme comprising of the training delivered by the selected subcontractor and any additional training as provided for by the Contractor, in which the various skills required for the execution and completion of the works are imparted to the workers, and where applicable, small, medium and micro enterprises engaged thereon, in a programmed and progressive manner. Selected workers shall be trained progressively throughout the duration of the contract in the various stages of a particular type of work.

D 03.2 The skills training programme to be implemented by the selected subcontractor shall comply with the following minimum standards:

- (a) Be accredited by the Civil Engineering Training Authority (CETA) or other institutions recognised by the Department of Labour, as being appropriate for application on this project. Accredited training refers to both the trainers as well as to the training materials.
- (b) Be delivered by suitably qualified and experienced trainers accredited to do so.

D 03.3 The Contractor shall provide with his tender, full details of any additional accredited and in-house training, viewed to be necessary by the Contractor, which he intends to implement at his own cost. These details shall include the following:

- (a) The name of the accredited training institution and programme
- (b) The various aspects of each type of training comprised in the programme
- (c) The manner in which the training is to be delivered
- (d) The numbers and details of the trainers to be utilised.

Details of such additional skills training shall be attached to Form H of the forms to be completed by the Tenderer.

D 03.4 The Contractor shall be responsible for the provision of the necessary items for the delivery of the specified and additional skills training programme, including the following:

- (a) Sufficient skilled, competent and accredited trainers to deliver the additional training programme to workers in accordance with the training programme
- (b) A suitably furnished venue
- (c) Transport of the workers as required
- (d) Tools, equipment, and teaching aids
- (e) Stationery and all other necessary materials.

D 03.5 Selection of candidates

- (a) Members of the workforce will be selected by the Engineer, assisted by the Contractor and the Liaison Officer, to receive specific training as approved by the Engineer.
- (b) The following will be taken into account in the selection of the workers to receive the specified training:
 - i. Previous experience (if any)
 - ii. Previous courses completed (if any)
 - iii. Module specific requirements.

D 03.6 Duration of training

- (a) The Contractor shall allow in his programme for the selected members of the workforce to be engaged in the specified training modules.
- (b) Provision must also be made by the Contractor for members of the workforce to receive any additional training as provided for by the Contractor.

D 03.7 All specified skills-related training shall take place only during normal working hours and the Contractor shall ensure that the selected workers are available at the appropriate times to undergo such training.

D 03.08 Both the selected subcontractor's and the Contractor's additional training programme shall be subject to the approval of the Engineer, and if so instructed by the Engineer shall alter or amend the programme and course content to suit changing conditions on site and all changes in the Contractor's programme of work.

D 03.09 The Contractor shall keep comprehensive records of the training given to each worker involved in training as well as the nature and number of each task executed by the worker and whenever required shall provide copies of such records to the Engineer.

D 03.10 Workers shall be remunerated in respect of all time spent undergoing the specified training in terms of Clause D03.02, at the minimum specified wage rate for the area of the Works as indicated in Form P: Appendix to Tender.

D 03.11 Use of workers

The Contractor shall, in so far as it is reasonably feasible take due cognisance of the nature of the works to be executed at any given time, and use trained workers on those aspects of the works for which they have been trained.

D 04 GENERIC TRAINING

D 04.01 The Contractor shall, from the commencement of the contract, implement a structured progressive training programme comprising of the training delivered by the selected subcontractor and any additional training as provided for by the Contractor. Selected workers shall be trained progressively throughout the duration of the contract.

D 04.02 The generic training programme is to be implemented by a training subcontractor to be nominated by the Engineer, upon the instruction of the Employer's Programme Manager.

D 04.03 The Contractor shall provide with his tender, full details of any additional recognised and in-house training viewed to be necessary by the Contractor, which he intends to implement at his own cost. These details shall include the following:

- (a) The name of the training institution and programme
- (b) The various aspects of each type of training comprised in the programme
- (c) The manner in which the training is to be delivered
- (d) The numbers and details of the trainers to be utilized.

Details of such additional generic training shall be attached to Form H of the forms to be completed by the Tenderer.

D 04.04 The Contractor shall be responsible for the provision of the necessary items for the delivery of the specified and additional generic training programme, including the following:

- (a) A suitably furnished venue
- (b) Transport of the workers as required
- (c) Tools, equipment, and teaching aids
- (d) Stationery and all other necessary materials.

D 04.05 All generic training shall take place outside of normal working hours.

D 04.06 The Contractor's training programme, if any, shall be subject to the approval of the Engineer, and if so instructed by the Engineer shall alter or amend the programme and course content.

D 04.07 The Contractor shall keep comprehensive records of the training given to each worker involved in training and whenever required shall provide copies of such records to the Engineer. At the successful completion of each course provided by the Contractor each student shall be issued with a certificate indicating the course contents as proof of attendance and completion.

D 04.08 No remuneration in respect of time spent undergoing training in terms of this Clause will be made to any of the workers.

D 05 ENTREPRENEURIAL SKILLS TRAINING

D 05.01 Training needs assessments of the Contractor and his sub-contractors will be undertaken during the course of the Contract by a sub-contractor to be nominated by the Engineer, on the instruction of the Employer's Capex Programme Manager. The training needs assessments shall have as their focus contractor development, and shall identify needs for business development, business management and technical construction management skills. Such training needs may be identified in personnel both in the permanent employ of the Contractor and/or his sub-contractors, as well as temporary employees thereof.

D 05.02 Once the needs assessments have been completed, training to meet the needs identified in the assessment phase will be provided, again by a sub-contractor to be nominated by the Engineer, upon the instruction of the Employer's Programme Manager.

D 05.03 The Contractor shall assist in facilitating in the delivery of the training, by instructing and motivating personnel and subcontractors regarding attendance and participation therein.

D 05.04 The Contractor shall further make all reasonable efforts to co-ordinate the programming of the subcontractor's work with that of the delivery of the structured training.

D 05.05 Following completion of the structured training, members of small, medium and micro contractors/subcontractors that have demonstrated understanding of and competence in the training material are to be appropriately certified by the accrediting body.

D 05.06 The Contractor shall provide with his tender, full details of any additional accredited and in-house training, viewed to be necessary by the Contractor, which he intends to implement at his own cost. These details shall include the following:

- (a) The name of the training institution and programme

- (b) The various aspects of each type of training comprised in the programme
- (c) The manner in which the training is to be delivered
- (d) The numbers and details of the trainers to be utilized.

Details of such additional entrepreneurial training shall be attached to Form H of the forms to be completed by the Tenderer.

D 05.07 The Contractor shall be responsible for the provision of the necessary items for the delivery of the entrepreneurial training programme, including the following:

- (a) A suitably furnished venue
- (b) Transport of the subcontractors as required
- (c) Tools, equipment, and teaching aids
- (d) Stationery and all other necessary materials.

D 05.08 All specified entrepreneurial training shall take place within normal working hours.

D 05.09 The Contractor's training programme, if any, shall be subject to the approval of the Engineer, and if so instructed by the Engineer shall alter or amend the programme and course content.

D 05.10 The Contractor shall keep comprehensive records of all training given to personnel and subcontractors involved in training and whenever required shall provide copies of such records to the Engineer. At the successful completion of each course each subcontractor shall be issued with a certificate indicating the course contents as proof of attendance and completion.

D 05.11 No remuneration in respect of time spent undergoing specified training in terms of this Clause will be made to any of the subcontractors.

D 06 MEASUREMENT AND PAYMENT

D 06.01 Basic principles

(a) General

Measurement and payment for all work executed in terms of this contract shall be measured and paid for in accordance with the principles set out in Clause D 04.02 of the project specifications, irrespective of whether the work is executed as an integral part of the provision of training in terms of this specification.

(b) Training

The Contractor shall only be reimbursed for the amounts actually paid by the Contractor to the selected subcontractors appointed as directed by the Employer, in execution of the Engineer's written instruction, plus a percentage as tendered to cover all his charges and profits.

D 06.02 Scheduled items

Payment items are included in the Schedule of Quantities for the provision of the specified training by selected subcontractors only. Any additional training as viewed by the Contractor to be necessary shall be viewed to be included in the Schedule of Quantities and shall not be paid for separately.

| Item | Unit |
|---|-----------------|
| D 07.01 Training: | |
| (a) Technical skills | Provisional Sum |
| (b) Generic and Management skills | Provisional Sum |

(c) Training venue
.....lump sum

(d) Remuneration of workers undergoing technical skills training Provisional Sum

(e) Contractor's handling costs, profit and all other charges in respect of Sub items D 07.01(a) and (b):

(i) Technical skillspercentage (%)

(ii) Generic and Management skillspercentage (%)

Payment under sub items D 07.01(a) and (b) shall be the amounts actually paid to the training institutions and shall be made in accordance with the provisions of the General Conditions of Contract.

The lump sum tendered for sub item D 07.01 (c) shall include full compensation for the provision of a suitable training venue, for all necessary lighting, furniture, stationery, consumables and study material, and for transportation of the workers to and from the training venue. Payment of the lump sum will be made in two instalments as follows:

- (i) The first instalment, 75% of the lump sum, will be paid after the Contractor has met all his obligations regarding the provision of the training venue as specified.
- (ii) The second and final instalment, 25% of the lump sum, will be paid after the Contractor has met all his obligations regarding the provision of all the training programmes specified in the document.

Payment under sub item D 07.01 (d) shall be the actual sum paid to workers undergoing technical skills training. The Contractor will not be reimbursed directly for his administrative costs, which will be deemed to be included in the rates tendered for item B13.01.

The percentages tendered for sub item D 07.01 (e) shall be the percentages of the amounts actually reimbursed to the Contractor under sub items D 07.01 (a) and (b) and shall be in full and final compensation in respect of the Contractor's handling costs, profit, mentoring, record keeping, reporting and all other charges in connection with providing the services."



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PROJECT SPECIFICATIONS

PART E : HEALTH AND SAFETY SPECIFICATION

PROJECT SPECIFICATIONS

PART E : HEALTH AND SAFETY SPECIFICATION

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E 01 SCOPE

This specification covers the requirements, notwithstanding the provisions of all other appropriate legislation and regulations in this regard, for ensuring the continued health and safety of all personnel having access to the construction site, and in ensuring that persons not having such access may not enter the site for the duration of all construction works undertaken on the site.

E 02 INTERPRETATIONS

E 02.01 Supporting documents

The tender rules, conditions of contract, standard, supplementary and specific specifications and project specifications and drawings shall *inter alia* be read in conjunction with this specification, together with the Occupational Health and Safety Amendment Act (Act 85 of 1993) and the Construction Regulations issued in pursuance of this Act in Government Gazette no. 25207 dated 18 July 2003.

E 02.02 Application

The provisions of this specification shall apply in respect of all Contractors appointed by the Employer for work on the site, as well as to all sub-contractors appointed by Contractors, their personnel and assigned agents expected to work on the site.

E 03 FALL PROTECTION

E 03.1 The complete contents of Paragraph 8, and all of its sub-paragraphs, of the Construction Regulations published in Government Gazette no. 25207 dated 18 July 2003, read verbatim, and with all meanings assigned thereto by the definitions included in the said Construction Regulations, shall be deemed to constitute the contents of this specification.

E 04 STRUCTURES

E 04.1 The complete contents of Paragraphs 9(1) and 9(3), and all of their sub-paragraphs, of the Construction Regulations published in Government Gazette no. 25207 dated 18 July 2003, read verbatim, and with all meanings assigned thereto by the definitions included in the said Construction Regulations, shall be deemed to constitute the contents of this specification.

E 05 FORMWORK AND SUPPORT WORK

E 05.1 The complete contents of Paragraph 10, and all of its sub-paragraphs, of the Construction Regulations published in Government Gazette no. 25207 dated 18 July 2003, read verbatim, and with all meanings assigned thereto by the definitions included in the said Construction Regulations, shall be deemed to constitute the contents of this specification.

E 06 EXCAVATION WORK

E 06.1 The complete contents of Paragraph 11, and all of its sub-paragraphs, of the Construction Regulations published in Government Gazette no. 25207 dated 18 July 2003, read verbatim, and with all meanings assigned thereto by the definitions included in the said Construction Regulations, shall be deemed to constitute the contents of this specification.

E 07 DEMOLITION WORK

E 07.1 The complete contents of Paragraph 12, and all of its sub-paragraphs, of the Construction Regulations published in Government Gazette no. 25207 dated 18 July 2003, read verbatim, and with all meanings assigned thereto by the definitions included in the said Construction Regulations, shall be deemed to constitute the contents of this specification.

E 08 SCAFFOLDING AND SUSPENDED PLATFORMS

E 08.1 The complete contents of Paragraph 14, and all of its sub-paragraphs, of the Construction Regulations published in Government Gazette no. 25207 dated 18 July 2003, read verbatim, and with all meanings assigned thereto by the definitions included in the said Construction Regulations, shall be deemed to constitute the contents of this specification pertaining to the use of scaffolding.

E 08.2 The use of suspended platforms for access to any works on this contract is expressly forbidden.

E 09 BOATSWAIN'S CHAIRS

E 09.1 The complete contents of Paragraph 16, and all of its sub-paragraphs, of the Construction Regulations published in Government Gazette no. 25207 dated 18 July 2003, read verbatim, and with all meanings assigned thereto by the definitions included in the said Construction Regulations, shall be deemed to constitute the contents of this specification.

E 10 MATERIAL HOISTS

E 10.1 The complete contents of Paragraph 17, and all of its sub-paragraphs, of the Construction Regulations published in Government Gazette no. 25207 dated 18 July 2003, read verbatim, and with all meanings assigned thereto by the definitions included in the said Construction Regulations, shall be deemed to constitute the contents of this specification.

E 11 BATCH PLANTS

E 11.1 The complete contents of Paragraph 18, and all of its sub-paragraphs, of the Construction Regulations published in Government Gazette no. 25207 dated 18 July 2003, read verbatim, and with all meanings assigned thereto by the definitions included in the said Construction Regulations, shall be deemed to constitute the contents of this specification.

E 12 EXPLOSIVE POWERED TOOLS

E 12.1 The complete contents of Paragraph 19, and all of its sub-paragraphs, of the Construction Regulations published in Government Gazette no. 25207 dated 18 July 2003, read verbatim, and with all meanings assigned thereto by the definitions included in the said Construction Regulations, shall be deemed to constitute the contents of this specification.

E 13 CRANES

E 13.1 The complete contents of Paragraph 20, and all of its sub-paragraphs, of the Construction Regulations published in Government Gazette no. 25207 dated 18 July 2003, read verbatim, and with all meanings assigned thereto by the definitions included in the said Construction Regulations, shall be deemed to constitute the contents of this specification.

E 14 CONSTRUCTION VEHICLES AND MOBILE PLANT

E 14.1 The complete contents of Paragraph 21, and all of its sub-paragraphs, of the Construction Regulations published in Government Gazette no. 25207 dated 18 July 2003, read verbatim, and with all meanings assigned thereto by the definitions included in the said Construction Regulations, shall be deemed to constitute the contents of this specification.

E 15 ELECTRICAL INSTALLATIONS AND MACHINERY ON CONSTRUCTION SITES

E 15.1 The complete contents of Paragraph 22, and all of its sub-paragraphs, of the Construction Regulations published in Government Gazette no. 25207 dated 18 July 2003, read verbatim, and with all meanings assigned thereto by the definitions included in the said Construction Regulations, shall be deemed to constitute the contents of this specification.

E 16 USE AND TEMPORARY STORAGE OF FLAMMABLE LIQUIDS ON CONSTRUCTION SITES

E 16.1 The complete contents of Paragraph 23, and all of its sub-paragraphs, of the Construction Regulations published in Government Gazette no. 25207 dated 18 July 2003, read verbatim, and with all meanings assigned thereto by the definitions included in the said Construction Regulations, shall be deemed to constitute the contents of this specification.

E 17 WATER ENVIRONMENTS

E 17.1 The complete contents of Paragraph 24, and all of its sub-paragraphs, of the Construction Regulations published in Government Gazette no. 25207 dated 18 July 2003, read verbatim, and with all meanings assigned thereto by the definitions included in the said Construction Regulations, shall be deemed to constitute the contents of this specification.

E 18 HOUSEKEEPING ON CONSTRUCTION SITES

E 18.1 The complete contents of Paragraph 25, and all of its sub-paragraphs, of the Construction Regulations published in Government Gazette no. 25207 dated 18 July 2003, read verbatim, and with all meanings assigned thereto by the definitions included in the said Construction Regulations, shall be deemed to constitute the contents of this specification.

E 19 STACKING AND STORAGE ON CONSTRUCTION SITES

E 19.1 The complete contents of Paragraph 26, and all of its sub-paragraphs, of the Construction Regulations published in Government Gazette no. 25207 dated 18 July 2003, read verbatim, and with all meanings assigned thereto by the definitions included in the said Construction Regulations, shall be deemed to constitute the contents of this specification.

E 20 FIRE PRECAUTIONS ON CONSTRUCTION SITES

E 20.1 The complete contents of Paragraph 27, and all of its sub-paragraphs, of the Construction Regulations published in Government Gazette no. 25207 dated 18 July 2003, read verbatim, and

with all meanings assigned thereto by the definitions included in the said Construction Regulations, shall be deemed to constitute the contents of this specification.

E 21 CONSTRUCTION WELFARE FACILITIES

E 21.1 The complete contents of Paragraph 28, and all of its sub-paragraphs, of the Construction Regulations published in Government Gazette no. 25207 dated 18 July 2003, read verbatim, and with all meanings assigned thereto by the definitions included in the said Construction Regulations, shall be deemed to constitute the contents of this specification.

E 22 MEASUREMENT AND PAYMENT

E 22.1 Payment for the contractor's obligations in respect of the Occupational Health and Safety act and Construction Regulations shall be made through three payment items described below. The three payment items together shall include full compensation for all personnel (including a dedicated full time Construction Safety Officer), cost and incidentals in respect of compliance with the enforcement of the Health and Safety Specifications, which shall include for the compilation, presentation, implementation and maintenance of the Health and Safety Plan as contemplated. In tendering rates for the three items the contractor shall ensure that the sum of the amounts for the three items shall not be less than one percent (1%) of the Tender Amount.

All of the Contractor's costs associated with compliance with the provisions of this part of the Project Specifications shall be deemed to be included in the rates tendered for the items of work listed below.

| Item | Unit |
|---|----------|
| E 23.01 Contractor's initial obligations in respect of the Occupational Health and Safety Act and Construction Regulations | Lump Sum |

The full amount will be paid in one instalment only once:-

- (a) The contractor has notified the Provincial Director of the Department of Labour in writing of the project.
- (b) The contractor has made the required initial appointments of employees and sub-contractors.
- (c) The client has approved the contractor's Health and Safety Plan.
- (d) The contractor has set up his Health and Safety File.

| Item | Unit |
|--|-------|
| E 23.02 Contractor's time related obligations in respect of the Occupational Health and Safety Act and Construction Regulations | Month |

The tendered monthly amount shall represent full compensation for that part of the contractor's general obligations in terms of the Occupational Health and Safety Act and the Construction Regulations which are mainly a function of time. This includes inter alia payment of all costs for the appointment of all staff contemplated in the construction regulations and the transport of employees on site. Payment will be monthly only after payment for Item E 23.01 has been made.

| Item | Unit |
|---|----------|
| E 23.03 Submission of the Health and Safety File | Lump Sum |

The tendered lump sum shall represent full compensation for the contractor meeting all his obligations in respect of the Occupational Health and Safety Act and the Construction Regulations and for the preparation and submission of his Health and Safety File complete as envisaged on this specification to the Client's satisfaction.

This amount will be paid only once the contractor has met all his obligations in respect of the Occupational Health and Safety Act and the Construction Regulations and has submitted his Health and Safety File complete as envisaged on this specification to the Client's satisfaction.



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**RE-ADVERT: APPOINTMENT OF A 7 CE/GB OR HIGHER CIDB REGISTERED
CONTRACTOR FOR THE CONSTRUCTION OF TOILETS AND SEWER
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BID NO.: 23/2023/24

PROJECT SPECIFICATIONS

PART F: HIV/AIDS SPECIFICATION

PROJECT SPECIFICATIONS

PART F: HIV/AIDS SPECIFICATION

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F 01 SCOPE

F 01.1 This specification contains all requirements applicable to the Contractor for creating HIV/AIDS awareness amongst all of the Workers involved in this project for the duration of the construction period, through the following strategies:

F 01.2 Raising awareness about HIV/AIDS through education and information on the nature of the disease, how it is transmitted, safe sexual behavior, attitudes towards people affected and people living with HIV/AIDS, how to live a healthy lifestyle with HIV/AIDS, the importance of voluntary testing and counseling, the diagnosis and treatment of Sexually Transmitted Infections, and the closest health service providers

F 01.3 Informing Workers of their rights with regard to HIV/AIDS in the workplace

F 01.4 Providing Workers with access to condoms and other awareness material that will enable construction Workers to make informed decisions about sexual practices

F 02 DEFINITIONS AND ABBREVIATIONS

F 02.1 Definitions

Service Provider: The natural or juristic person recognised and approved by the Department of Public Works as a specialist in conducting HIV/AIDS awareness programmes

Service Provider Workshop Plan: A plan outlining the content, process and schedule of the training and education workshops presented by a Service Provider, which has been approved by the Representative/Agent

Worker: Persons in the employ of the Contractor or under the direction or supervision of the Contractor or any of his sub-contractors, who are on site for a minimum period of 30 days in all

F 02.2 Abbreviations

HIV : Human Immunodeficiency Virus
AIDS : Acquired Immune Deficiency Syndrome
STI : Sexually Transmitted Infection

F 03 BASIC METHOD REQUIREMENT

F 03.1 The Contractor shall, through a Service Provider, conduct onsite workshops with the Workers

F 03.2 The Service Provider shall develop and compile a Service Provider Workshop Plan to be presented at the workshops and which will be best suited for this project to achieve the specified

objectives with regards to HIV/AIDS awareness. The Contractor shall submit the Service Provider Workshop Plan for approval within 21 days after the tender acceptance date. After approval by the Department's Tender Committee, the Contractor shall make available an appropriate venue that will be conducive to education and training.

F 03.3 The Service Provider Workshop Plan shall address, but will not be limited to the following:

- (a) The nature of the disease;
- (b) How it is transmitted;
- (c) Safe sexual behaviour;
- (d) Post exposure services such as voluntary counselling and testing (VCT) and nutritional plans for people living with HIV/AIDS;
- (e) Attitudes towards other people with HIV/AIDS;
- (f) Rights of the Worker in the workplace;
- (g) How the awareness champion will be equipped prior to commencement of the HIV/AIDS awareness programme with basic HIV/AIDS information and the necessary skills to handle questions regarding the HIV/AIDS awareness programme on site sensitively;
- (h) How the Service Provider will support the awareness champion;
- (i) Location and contact numbers of the closest clinics, VCT facilities, counselling services and referral systems;
- (j) How the workshops will be presented, including frequency and duration;
- (k) How the workshops will fit in with the construction programme;
- (l) How the Service Provider will assess the knowledge and attitude levels of attendees to structure workshops accordingly;
- (m) How the video will be used;
- (n) How the Service Provider will elicit maximum participation from the Workers;
- (o) A questions and answers slot (interactive session)

The Service Provider Workshop Plan shall encompass the Specific Learning Outcomes (SLO) as stipulated

F 04 HIV/AIDS AWARENESS EDUCATION AND TRAINING

F 04.1 Workshops

The Contractor shall ensure that all the Workers attend the workshops.

The workshops shall adequately deal with all the aspects contained in the Service Provider Workshop Plan. In order to enhance the learning experience, groups of not exceeding 25 people shall attend the interactive sessions of the workshops.

F 04.2 Recommended practice

Workshop Schedule

Presenting information contained in the Service Provider Workshop Plan can be divided in as many workshop sessions as deemed practicable by the Contractor, provided that all Workers are exposed to all aspects of the workshops as outlined in the Service Provider Workshop Plan.

Breaking down the content of information to be presented to Workers into more than one workshop session however, has the added advantage that messages are reinforced over time while providing opportunity between workshop sessions for Workers to reflect and test information. Workers will also have an opportunity to ask questions at a next session.

An attendance register should be kept by the Service Provider at every workshop and should be handed to the Department's Project Manager on a monthly basis together with Process Indicator Forms.

Service Providers

A data base of recommended Service Providers is available from the Department of Public Works, Private Bag X65, Pretoria, 0001, located at the Central Government Offices, corner of Bosman and Vermeulen Streets, Pretoria and at all Public Works Regional Offices

HIV/AIDS Specific Learning Outcomes and Assessment Criteria

Workers shall be exposed to workshops for a minimum duration of two-and-a-half hours. In order to set a minimum standard requirement, the following specific learning outcomes and assessment criteria shall be met

(a) UNIT 1: The nature of HIV/AIDS

After studying and understanding this unit the Worker will be able to differentiate between HIV and AIDS and comprehend whether or not it is curable. The Worker will also be able to explain how the HI virus operates once a person is infected and identify the symptoms associated with the progression of HIV/AIDS.

Assessment Criteria:

1. Define and describe HIV and AIDS
2. List and describe the progression of HIV/AIDS

(b) UNIT 2: Transmission of the HI virus

After studying and understanding this unit the Worker will be able to identify bodily fluids that carry the HI virus. The Worker will be able to recognise how HIV/AIDS is transmitted and how it is not transmitted.

Assessment Criteria:

1. Record in what bodily fluids you will find the HI virus.
2. Describe how HIV/AIDS can be transmitted.
3. Demonstrate your ability to distinguish between how HIV/AIDS is transmitted and misconceptions around transmittance of HIV/AIDS.

(c) UNIT 3: HIV/AIDS preventative measures

After studying and understanding this unit the Worker will comprehend how to act in a way that would minimise the risk of HIV/AIDS infection and to use measures to prevent the HI virus to enter the blood stream.

Assessment Criteria:

1. Report on how you could minimise your risk of HIV/AIDS infection.
2. Report on precautions that can be taken to prevent HIV/AIDS infection.
3. Explain or demonstrate how to use a male and female condom.
4. List of factors that could jeopardize the safety condoms provide against HIV/AIDS transmission.

(d) UNIT 4: Voluntary HIV/AIDS counseling and testing

After studying and understanding this unit the Worker will be able to recognise methods of testing for HIV/AIDS infection. The Worker will be able to understand the purpose of voluntary HIV/AIDS testing and pre- and post-test counseling.

Assessment Criteria:

1. Describe kinds of testing for HIV/AIDS infection.
2. Report on why voluntary testing is important.
3. Report on why pre- and post-test counseling is important.

(e) UNIT 5: Living with HIV/AIDS

After studying and understanding this unit the Worker will be able to recognise the importance of caring for people living with HIV/AIDS and be able to manage HIV/AIDS.

Assessment Criteria:

1. List and describe ways to manage HIV/AIDS.
2. Describe nutritional needs of people living with HIV/AIDS.
3. Describe ways to embrace a healthy lifestyle as a person living with HIV/AIDS.
4. Explain the need of counseling and support to people living with HIV/AIDS.

(f) UNIT 6: Treatment options for people with HIV/AIDS

After studying and understanding this unit the Worker will be familiar with the various treatments available to HIV/AIDS infected or potentially HIV/AIDS infected people.

Assessment Criteria:

1. Discuss anti-retroviral therapy
2. List methods of treatment to prevent HIV/AIDS transmission from mother-to-child.
3. Describe the need for treatment of opportunistic diseases for people living with HIV/AIDS.
4. Describe post exposure prophylactics.

(g) UNIT 7: The rights and responsibilities of Workers in the workplace with regards to HIV/AIDS

After studying and understanding this unit the Worker will be able to identify the rights and responsibilities of the Worker living with HIV/AIDS in the workplace. The Worker will recognise the importance of accepting colleagues living with HIV/AIDS and treating them in a non-discriminative way.

Assessment Criteria:

1. Discuss the rights of a person living with HIV/AIDS in the workplace.
2. Discuss the responsibilities of a person living with HIV/AIDS in the workplace.
3. Report on why acceptance and non-discrimination of colleagues living with HIV/AIDS is important.

F04.3 Displaying of plastic laminated posters and distribution of information booklets

- (a) The Contractor shall obtain a set of four posters conveying different key messages, and information booklets from the Construction Industry Development Programme Unit (CIDP), Room A520 located in the Central Government Offices, corner of Bosman and Vermeulen Streets, Pretoria or at all Regional Offices of the Department of Public Works. The postal address is the Department of Public Works, Private Bag X65, Pretoria, 0001.
- (b) The above-mentioned posters and information booklets have been prepared to raise awareness and to share information about HIV/AIDS and STI's.
- (c) Posters or display stands shall be displayed on site as soon as possible but not later than 14 days after the date of site hand over.
- (d) Posters shall be displayed in areas highly trafficked by Workers, including toilets, rest areas, the site office and compounds.
- (e) The posters on display should always be intact, clear and readable.
- (f) Information booklets must be distributed to all Workers as soon as possible but not later than 14 days after site hand over, or as soon as the Worker joins the site.

F05 PROVIDING WORKERS WITH ACCESS TO CONDOMS

F05.1 The Contractor shall provide and maintain condom dispensers and make both male and female condoms complying with the requirements of SABS ISO 4074 available at all times to all Workers at readily accessible points on site, for the duration of the contract. The Contractor may obtain condom dispensers from the Department of Health and condoms may be obtained from the local clinic or the Department of Health.

F05.2 At least one male and one female condom dispenser and a sufficient supply of condoms, all to the approval of the Representative/Agent, shall be on site within 14 days of site hand over. Contractors should note that arrangements to obtain condoms from the Department of Health Clinics prior to site hand over may be necessary to ensure that condoms are available within 14 days of site hand over.

F05.3 Condoms shall be made available in areas highly trafficked by Workers, including toilets, the site office and compounds.

F06 ENSURING ACCESS TO HIV/AIDS TESTING AND COUNSELLING FACILITIES AND TREATMENT OF SEXUALLY TRANSMITTED INFECTIONS (STI)

F06.1 The Contractor shall provide the Workers with the names of the closest Service Providers that provide HIV/AIDS testing and counseling and Clinics providing Sexually Transmitted Infection (STI) diagnosis and treatment. Information on these Service Providers and Clinics should be displayed on a poster of a size not smaller than A1 in an area highly trafficked by Workers.

F07 APPOINTMENT OF AN HIV/AIDS AWARENESS CHAMPION

F07.1 Within 14 days of site hand over the Contractor shall appoint an Awareness Champion, from, amongst the Workers, who speaks and understands all the languages spoken by the Workers and he/she shall be on site during all stages of the construction period. The Contractor shall ensure that the Awareness Champion has been trained by the Service Provider on basic HIV/AIDS information, the support services available and the necessary skills to handle questions regarding the HIV/AIDS programme in a sensitive way.

The Awareness Champion shall be responsible for:

- (a) Liaising with the Service Provider on organising awareness workshops;
- (b) Filling condom dispensers and monitoring condom distribution;
- (c) Handing out information booklets;
- (d) Placing and maintaining posters

F08 MONITORING

F08.1 The Contractor shall grant to the Representative/Agent reasonable access to the construction site in order to conduct unannounced site visits in order to establish that the Contractor complies with his obligations regarding HIV/AIDS awareness under this contract.

F08.2 The Representative/Agent shall conduct the site visits with the least possible disruption to the Contractor's daily routine.

F08.3 Contractors must report problems that they experience in implementing the HIV/AIDS requirements to the Representative/Agent.

F08.4 The attached SITE CHECKLIST (SCHEDULE A) shall be completed and submitted at every construction progress inspection to the Representative/Agent.

F08.5 The attached SERVICE PROVIDER REPORT (SCHEDULE B) shall be completed and submitted on a monthly basis to the Department's Project Manager through the Representative/Agent

F08.6 The Contractor shall, at the end of the contract, complete and submit a close out programme report CONTRACTOR HIV/AIDS PROGRAMME REPORT (SCHEDULE C)

F09 MEASUREMENT AND PAYMENTS

F09.1 It is required of tenderers to thoroughly study the HIV/AIDS Specifications of the Department that must be read together with and is deemed to be incorporated in the Schedule of Quantities. Provision for pricing of HIV/AIDS awareness must be made under Item F10.01 hereafter and it is explicitly pointed out that all requirements of the aforementioned specifications are deemed to be priced hereunder as the said item represents the only method of measurement and no additional items or extras to the contract in this regard shall be entertained.

F09.2 Contractor should take note that compliance with the HIV/AIDS Specification is compulsory. In the event of partial or total non-compliance, the Representative /Agent, notwithstanding the provisions of any other clause to the contrary, reserves the right to delay issuing any progress payment certificate until the Contractor provides satisfactory proof of compliance. The Contractor shall not be entitled to any compensation of whatsoever nature, including interest, due to such delay of payment

| Item | Unit |
|----------------|---------------------------------------|
| F 10.01 | HIV AIDS Awareness obligations |
| | Lump Sum |

The tendered lump sum shall be in full compensation for the contractor providing an approved selected service provider to comply with the requirements and conditions of the Department's HIV AIDS Specifications, including the workshop education and training within an HIV AIDS Awareness programme and the Contractor's handling costs, profit, record keeping, reporting and all other charges in connection with providing the HIV AIDS Awareness programme.

Payment under item F10.01 will be made as follows:

80% of the amount will be paid once the service provider has complied with the requirements and conditions of the Department's HIV AIDS Specifications, including the workshop education and training within an HIV AIDS Awareness programme.

The outstanding 20% will be paid on completion of the contract, subject to the contractor's compliance in all respects with the requirements and conditions of the Department's HIV AIDS Specifications.



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BID NO.: 23/2023/24

PROJECT SPECIFICATIONS

PART G : GENERIC LABOUR-INTENSIVE SPECIFICATION

PROJECT SPECIFICATIONS

PART G : GENERIC LABOUR-INTENSIVE SPECIFICATION

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- G 01 SCOPE
- G 02 PRECEDENCE
- G 03 HAND EXCAVATEABLE MATERIAL
- G 04 LABOUR INTENSIVE WORKS

G1 SCOPE

This specification establishes general requirements for activities, which are to be, executed by hand involving the following:

- a) trenches having a depth of less than 1.5 metres
- b) storm water drainage
- c) low-volume roads and sidewalks

G2 PRECEDENCE

Where this specification is in conflict with any other standard or specification referred to in the Scope of Works to this Contract, the requirements of this specification shall prevail.

G3 HAND EXCAVATEABLE MATERIAL

Hand excavateable material is material:

a) Granular materials:

- i) Whose consistency when profiled may in terms of table 1 be classified as very loose, loose, medium dense, or dense; or
- ii) Where the material is gravel having a maximum particle size of 10mm and contains no cobbles or isolated boulders, no more than 15 blows of a dynamic cone penetrometer is required to penetrate 100mm;

b) cohesive materials:

- i) whose consistency when profiled may in terms of table 1 be classified as very soft, soft, firm, stiff and stiff / very stiff; or
- ii) where the material is gravel having a maximum particle size of 10mm and contains no cobbles or isolated boulders, no more than 8 blows of a dynamic cone penetrometer is required to penetrate 100mm;

Note: 1) A boulder, a cobble and gravel is material with a particle size greater than 200mm, between 60 and 200mm.

- 2) A dynamic cone penetrometer is an instrument used to measure the insitu shear resistance of a soil comprising a drop weight of approximately 10 kg, which falls through a height of 400mm and drives a cone having a maximum diameter of 20mm (cone angle of 60° with respect to the horizontal) into the material being used.

Table 1: Consistency of materials when profiled

| GRANULAR MATERIALS | | COHESIVE MATERIALS | |
|--------------------|--|--------------------|---|
| CONSISTENCY | DESCRIPTION | CONSISTENCY | DESCRIPTION |
| Very loose | Crumbles very easily when scraped with a geological pick. | Very soft | Geological pick head can easily be pushed in as far as the shaft of the handle. |
| Loose | Small resistance to penetration by sharp end of a geological pick. | Soft | Easily dented by thumb; sharp end of a geological pick can be pushed in 30-40 mm; can be moulded by fingers with some pressure. |
| Medium dense | Considerable resistance to penetration by sharp end of a geological pick. | Firm | Indented by thumb with effort; sharp end of geological pick can be pushed in up to 10 mm; very difficult to mould with fingers; can just be penetrated with an ordinary hand spade. |
| Dense | Very high resistance to penetration by the sharp end of geological pick; requires many blows for excavation. | Stiff | Can be indented by thumbnail; slight indentation produced by pushing geological picks point into soil; cannot be moulded by fingers. |
| Very dense | High resistance to repeated blows of a geological pick. | Very stiff | Indented by thumbnail with difficulty; slight indentation produced by blow of a geological pick point. |

G4 LABOUR INTENSIVE WORKS

Trench excavation

All hand excavateable material in trenches having a depth of less than 1,5 metres shall be excavated by hand.

Compaction of backfilling to trenches (areas not subject to traffic)

Backfilling to trenches shall be placed in layers of thickness (before compaction) not exceeding 100mm. Each layer shall be compacted using hand tampers

- To 90% Proctor density;
- Such that in excess of 5 blows of a dynamic cone penetrometer (DCP) is required to penetrate 100 mm of the backfill, provided that backfill does not comprise more than 10% gravel of size less than 10mm and contains no isolated boulders, or
- Such that the density of the compacted trench backfill is not less than that of the surrounding undisturbed soil when tested comparatively with a DCP.

Excavation

All hand excavateable material including topsoil classified, as hand excavateable shall be excavated by hand. Harder material may be loosened by mechanical means prior to excavation by hand.

The excavation of any material, which presents the possibility of danger or injury to workers, shall not be excavated by hand.

Clearing and grubbing

Grass and small bushes shall be cleared by hand.

Shaping

All shaping shall be undertaken by hand.

Loading

All loading shall be done by hand, regardless of the method of haulage.

Haul

Excavation material shall be hauled to its point of placement by means of wheelbarrows where the haul distance is not greater than 150 m.

Offloading

All material, however transported, is to be off-loaded by hand, unless tipper-trucks are utilised for haulage

Spreading

All material shall be spread by hand.

Compaction

Small areas may be compacted by hand provided that the specified compaction is achieved.

Grassing

All grassing shall be undertaken by sprigging, sodding, or seeding by hand.

Stone pitching and rubble concrete masonry

All stone required for stone pitching and rubble concrete masonry, whether grouted or dry, must be collected, loaded, off loaded and placed by hand.

Sand and stone shall be hauled to its point of placement by means of wheelbarrows where the haul distance is not greater than 150m.

Grout shall be mixed and placed by hand.

Manufactured Elements

Elements manufactured or designed by the Contractor, such as manhole rings and cover slabs, pre-cast concrete planks and pipes, masonry units and edge beams shall not individually, have a mass of more than 320kg. In addition the items shall be large enough so that four workers can conveniently and simultaneously acquire a proper handhold on them.



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PROJECT SPECIFICATIONS

PART H : ENVIRONMENTAL MANAGEMENT PLAN

PROJECT SPECIFICATIONS

PART H : ENVIRONMENTAL MANAGEMENT PLAN

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H 01 SCOPE

This environmental management programme (EMP) sets out the methods by which proper environmental controls are to be implemented by the contractor. The duration over which the contractor's controls shall be in place cover the construction period of the project as well as the limited time after contract completion defined by the General Conditions of Contract, and the project specifications, as the defects notification period (maintenance period).

The provisions of this EMP are binding on the contractor during the life of the contract. They are to be read in conjunction with all the documents that comprise the suite of documents for this contract. In the event that any conflict occurs between the terms of the EMP and the project specifications or Record of Decision, the terms herein shall be subordinate.

The EMP is a dynamic document subject to similar influences and changes as are brought by variations to the provisions of the project specification. Any substantial changes shall be submitted to the Employer in writing for approval.

The EMP identifies the following:

Construction activities that will impact on the environment.

Specifications with which the contractor shall comply in order to protect the environment from the identified impacts.

Actions that shall be taken in the event of non-compliance.

H 02 DEFINITIONS

Alien Vegetation: alien vegetation is defined as undesirable plant growth which shall include, but not be limited to, all declared category 1 and 2 listed invader species as set out in the Conservation of Agricultural Resources Act (CARA) regulations. Other vegetation deemed to be alien shall be those plant species that show the potential to occupy in number, any area within the defined construction area and which are declared to be undesirable.

Construction Activity: a construction activity is any action taken by the contractor, his subcontractors, suppliers or personnel during the construction process as defined in the NHBRC.

Environment: environment means the surroundings within which humans exist and that could be made up of -

- the land, water and atmosphere of the earth;
- micro-organisms, plant and animal life;
- any part or combination of (i) and (ii) and the interrelationships among and between them; and

- the physical, chemical, aesthetic and cultural properties and conditions of the foregoing that influence human health and well-being.

Environmental Aspect: an environmental aspect is any component of a contractor's construction activity that is likely to interact with the environment.

Environmental Impact: an impact or environmental impact is the change to the environment, whether desirable or undesirable, that will result from the effect of a construction activity. An impact may be the direct or indirect consequence of a construction activity.

Record of Decision: a record of decision is a written statement from the National Department of Environmental Affairs and Tourism, (N.DEAT), that records its approval of a planned undertaking to improve, upgrade or rehabilitate a section of road and the mitigating measures required to prevent or reduce the effects of environmental impacts during the life of a contract.

Road Reserve: the road reserve is a corridor of land, defined by co-ordinates and proclamation, within which the road, including access intersections or interchanges, is situated. A road reserve may, or may not, be bounded by a fence.

Road Width: for the purposes of the EMP, the road width is defined as the area within the road reserve i.e. fence line to fence line, but also includes all areas beyond the road reserve that are affected by the continuous presence of the road, e.g. a reach of a water course.

H 03 IDENTIFICATION OF ENVIRONMENTAL ASPECTS AND IMPACTS

The contractor shall identify likely aspects before commencing with any construction activity. Examples of environment aspects include:

- waste generation
- stormwater discharge
- emission of pollutants into the atmosphere
- chemical use operations
- energy use operations
- water use operations
- use of natural resources
- noise generation

Thereafter the contractor shall programme his work in such a way that each cause and effect of a construction activity is also identified and the activity planned so as to prevent any impact from happening. If prevention is not practicable, or in the event of mishap or misapplication, the contractor shall provide plans and measures for the engineer's approval, which will limit and contain the magnitude, duration and intensity of the impact. The contractor shall demonstrate that he/she is capable of carrying out any repair and reinstatement of the damaged environment. These requirements shall be concurrent with the time constraints to produce an approved construction programme as may be required from time to time.

Listed below are some environmental impacts that could adversely alter an aspect of the environment through usual construction activities:

Pollution of atmosphere, soil or water
Destruction or removal of fauna and flora and effect on biological diversity
Deformation of the landscape
Soil erosion
Destruction of historical/heritage sites
Effect on the built environment
Effect on agricultural land and wetlands

General good construction practice will play an important role in avoiding the occurrence of an Impact. The contractor's attention is drawn, in this regard, to C1008. Environmental Management of Construction Activities

H 04 LEGAL REQUIREMENTS

G04.01 General

Construction will be according to the best industry practices, as identified in the project documents. This EMP, which forms an integral part of the contract documents, informs the contractor as to his duties in the fulfilment of the project objectives, with particular reference to the prevention and mitigation of environmental impacts caused by construction activities associated with the project. The contractor should note that obligations imposed by the EMP are legally binding in terms of environmental statutory legislation and in terms of the additional conditions to the general conditions of contract that pertain to this project. In the event that any rights and obligations contained in this document contradict those specified in the standard or project specifications then the latter shall prevail.

H04.02 Statutory and other applicable legislation

The contractor is deemed to have made himself conversant with all legislation pertaining to the environment, including provincial and local government ordinances, which may be applicable to the contract.

H 05 ADMINISTRATION OF ENVIRONMENTAL OBLIGATIONS**H05.01 Appointment of a Designated Environmental Officer (DEO)**

For the purposes of implementing the conditions contained herein, the contractor shall submit to the engineer for approval the appointment of a nominated representative of the contractor as the DEO for the contract. The request shall be given, in writing, at least fourteen days before the start of any work clearly setting out reasons for the nomination, and with sufficient detail to enable the engineer to make a decision. The engineer will, within seven days of receiving the request, approve, reject or call for more information on the nomination. Once a nominated representative of the contractor has been approved he/she shall be the DEO and shall be the responsible person for ensuring that the provisions of the EMP are complied with during the life of the contract. The engineer will be responsible for issuing instructions to the contractor where environmental considerations call for action to be taken. The DEO shall submit regular written reports to the engineer, but not less frequently than once a month.

The engineer shall have the authority to instruct the contractor to replace the DEO if, in the engineer's opinion, the appointed officer is not fulfilling his/her duties in terms of the requirements of the EMP or this specification. Such instruction will be in writing and shall clearly set out the reasons why a replacement is required.

There shall be an approved DEO on the site at all times.

H05.02 Administration

Before the contractor begins each construction activity the DEO shall give to the engineer a written statement setting out the following:

The type of construction activity.

Locality where the activity will take place.

Identification of the environmental aspects and impacts that might result from the activity.

Methodology for impact prevention for each activity or aspect.

Methodology for impact containment for each activity or aspect.

Emergency/disaster incident and reaction procedures.

Treatment and continued maintenance of impacted environment.

The contractor may provide such information in advance of any or all construction activities provided that new submissions shall be given to the engineer whenever there is a change or variation to the original.

The engineer may provide comment on the methodology and procedures proposed by the DEO, but he shall not be responsible for the contractor's chosen measures of impact mitigation and emergency/disaster management systems. However, the contractor shall demonstrate at inception and at least once during the contract that the approved measures and procedures function properly.

H05.03 Good Housekeeping

Contractor shall undertake "good housekeeping" practices during construction as stated subclauses 4.18 and 11.11 of the General Conditions of Contract. This will help avoid disputes on responsibility and allow for the smooth running of the contract as a whole. Good housekeeping extends beyond the wise practice of construction methods that leaves production in a safe state from the ravages of weather to include the care for and preservation of the environment within which the site is situated.

H06 TRAINING

The designated environmental officer (DEO) must be conversant with all legislation pertaining to the environment applicable to this contract and must be appropriately trained in environmental management and must possess the skills necessary to impart environmental management skills to all personnel involved in the contract.

The contractor shall ensure that adequate environmental training takes place. All employees shall have been given an induction presentation on environmental awareness. Where possible, the presentation needs to be conducted in the language of the employees. The environmental training should, as a minimum, include the following:

The importance of conformance with all environmental policies

The environmental impacts, actual or potential, of their work activities

The environmental benefits of improved personal performance;

Their roles and responsibilities in achieving conformance with the environmental policy and procedures and with the requirement of the Agency's environmental management systems, including emergency preparedness and response requirements;

The potential consequences of departure from specified operating procedures;

The mitigation measures required to be implemented when carrying out their work activities.

In the case of permanent staff the contractor shall provide evidence that such induction courses have been presented. In the case of new staff (including contract labour) the contractor shall inform the engineer when and how he/she intends concluding his environmental training obligations.

H 07 ACTIVITIES/ASPECTS CAUSING IMPACTS

A list of possible causes of environmental impacts that occur during construction activities is given in Table 7/1: Aspects or Activities that Cause Environmental Impacts during Construction Activities, which is to be found at the end of this part. This list is not exhaustive, and shall be used for guideline purposes only.

H 08 ENVIRONMENTAL MANAGEMENT OF CONSTRUCTION ACTIVITIES

H 08.01 Site Establishment

H 08.01.01 Site Plan

The contractor shall establish his construction camps, offices, workshops, staff accommodation and testing facilities on the site in a manner that does not adversely affect the environment. However, before construction can begin, the contractor shall submit to the engineer for his approval, plans of the exact location, extent and construction details of these facilities and the impact mitigation measures the contractor proposes to put in place.

The plans shall detail the locality as well as the layout of the waste treatment facilities for litter, kitchen refuse, sewage and workshop-derived effluents. The site offices should not be sited in close proximity to steep areas, as this will increase soil erosion. Preferred locations would be flat areas along the route. If the route traverses water courses, streams and rivers, it is recommended that the offices, and in particular the ablution facilities, aggregate stockpiles, spoil areas and hazardous material stockpiles are located as far away as possible from any water course as possible. Regardless of the chosen site, the contractor's intended mitigation measures shall be indicated on the plan. The site plan shall be submitted not later than the first site meeting. Detailed, electronic colour photographs shall be taken of the proposed site before any clearing may commence. These records are to be kept by the engineer for consultation during rehabilitation of the site.

H 08.01.02 Vegetation

The contractor has a responsibility to inform his staff of the need to be vigilant against any practice that will have a harmful effect on vegetation.

The natural vegetation encountered on the site is to be conserved and left as intact as possible. Vegetation planted at the site shall be indigenous and in accordance with instructions issued by the engineer. Only trees and shrubs directly affected by the works, and such others as may be indicated by the engineer in writing, may be felled or cleared. In wooded areas where natural vegetation has been cleared out of necessity, the same species of indigenous trees as were occurring, shall be re-established.

The project specification for the rehabilitation of the grass cover shall be strictly adhered to. Any proclaimed weed or alien species that propagates during the contract period shall be cleared by hand before seeding. Fires shall only be allowed in facilities or equipment specially constructed for this purpose. A firebreak shall be cleared and maintained around the perimeter of the camp and office sites.

H 08.01.03 Rehabilitation

The area where the site offices were erected will require rehabilitation at the end of the contract. All construction material, including concrete slabs and braai areas shall be removed from the site on completion of the contract.

H 08.01.04 Water for human consumption

Water for human consumption shall be available at the site offices and at other convenient locations on site.

All effluent water from the camp / office sites shall be disposed of in a properly designed and constructed system, situated so as not to adversely affect water sources (streams, rivers, pans dams etc). Only domestic type wastewater shall be allowed to enter this drain.

H 08.01.05 Heating and Cooking fuel

The contractor shall provide adequate facilities for his staff so that they are not encouraged to supplement their comforts on site by accessing what can be taken from the natural surroundings. The contractor shall ensure that energy sources are available at all times for construction and supervision personnel for heating and cooking purposes.

H 08.02 Sewage treatment

Particular reference in the site establishment plan shall be given to the treatment of sewage generated at the site offices, site laboratory and staff accommodation and at all localities on the site where there will be a concentration of labour. Sanitary arrangements should be to the satisfaction of project management, the local authorities and legal requirements.

Safe and effective sewage treatment will require one of the following sewage handling methods: septic tanks and soak-aways, dry-composting toilets such as “enviro loos”, or the use of chemical toilets which are supplied and maintained by a subcontractor. The type of sewage treatment will depend on the geology of the area selected, the duration of the contract and proximity (availability) of providers of chemical toilets. Should a soak-away system be used, it shall not be closer than 800 metres from any natural water course or water retention system. The waste material generated from these facilities shall be serviced on a regular basis. The positioning of the chemical toilets shall be done in consultation with the engineer.

Toilets and latrines shall be easily accessible and shall be positioned within walking distance from wherever employees are employed on the works. Use of the veld for this purpose shall not, under any circumstances, be allowed.

Outside toilets shall be provided with locks and doors and shall be secured to prevent them from blowing over. The toilets shall also be placed outside areas susceptible to flooding. The contractor shall arrange for regular emptying of toilets and shall be entirely responsible for enforcing their use and for maintaining such latrines in a clean, orderly and sanitary condition to the satisfaction of the engineer.

H 08.03 Waste Management

The contractor's intended methods for waste management and waste minimisation shall be implemented at the outset of the contract. All personnel shall be instructed to dispose of all waste in the proper manner.

H 08.03.01 Solid Waste

Solid waste shall be stored in an appointed area in covered, tip proof metal drums for collection and disposal. A refuse control system shall be established for the collection and removal of refuse to the satisfaction of the engineer. Disposal of solid waste shall be at a Department of Water Affairs and Forestry (DWAF) licensed landfill site or at a site approved by DWAF in the event that an existing operating landfill site is not within reasonable distance from the site offices and staff accommodation. No waste shall be burned or buried at or near the site offices, nor anywhere else on the site, including the approved solid waste disposal site.

H 08.03.02 Litter

No littering by construction workers shall be allowed. During the construction period, the facilities shall be maintained in a neat and tidy condition and the site shall be kept free of litter. Measures shall be taken to reduce the potential for litter and negligent behaviour with regard to the disposal of all refuse. At all places of work the contractor shall provide litter collection facilities for later safe disposal at approved sites.

H 08.03.03 Hazardous waste

Hazardous waste such as bitumen, tar, oils etc. shall be disposed of in a Department of Water Affairs and Forestry approved landfill site. Special care shall be taken to avoid spillage of tar or bitumen products such as binders or pre-coating fluid to avoid water-soluble phenols from entering the ground or contaminating water.

Under no circumstances shall the spoiling of tar or bituminous products on the site, over embankments, in borrow pits or any burying, be allowed. Unused or rejected tar or bituminous products shall be returned to the supplier's production plant. Any spillage of tar or bituminous products shall be attended to immediately and affected areas shall be promptly reinstated to the satisfaction of the engineer.

H 08.04 Control at the workshop

The contractor's management and maintenance of his plant and machinery will be strictly monitored according to the criteria given below, regardless whether it is serviced on the site (i.e. at the place of construction activity or at a formalised workshop)

H 08.04.01 Safety

All the necessary handling and safety equipment required for the safe use of petrochemicals and oils shall be provided by the contractor to, and used or worn by, the staff whose duty it is to manage and maintain the contractor's and his subcontractor's and supplier's plant, machinery and equipment.

H 08.04.02 Hazardous Material Storage

Petrochemicals, oils and identified hazardous substances shall only be stored under controlled conditions. All hazardous materials e.g. tar or bitumen binders shall be stored in a secured, appointed area that is fenced and has restricted entry. Storage of tar or bituminous products shall only take place using suitable containers to the approval of the engineer.

The contractor shall provide proof to the engineer that relevant authorisation to store such substances has been obtained from the relevant authority. In addition, hazard signs indicating the nature of the stored materials shall be displayed on the storage facility or containment structure. Before containment or storage facilities can be erected the contractor shall furnish the engineer with details of the preventative measures he proposes to install in order to mitigate against pollution of the surrounding environment from leaks or spillage. The preferred method shall be a concrete floor that is bunded. Any deviation from the method will require proof from the relevant authority that the alternative method proposed is acceptable to that authority. The proposals shall also indicate the emergency procedures in the event of misuse or spillage that will negatively affect an individual or the environment.

H 08.04.03 Fuel and Gas Storage

Fuel shall be stored in a secure area in a steel tank supplied and maintained by the fuel suppliers.. An adequate bund wall, 110% of volume, shall be provided for fuel and diesel areas to accommodate any leakage spillage or overflow of these substances. The area inside the bund wall shall be lined with an impervious lining to prevent infiltration of the fuel into the soil. Any leakage, spillage or overflow of fuel shall be attended to without delay.

Gas welding cylinders and LPG cylinders shall be stored in a secure, well-ventilated area.

H 08.04.04 Oil and Lubricant Waste

Used oil, lubricants and cleaning materials from the maintenance of vehicles and machinery shall be collected in a holding tank and sent back to the supplier. Water and oil should be separated in an oil trap. Oils collected in this manner, shall be retained in a safe holding tank and removed from site by a specialist oil recycling company for disposal at approved waste disposal sites for toxic/hazardous materials. Oil collected by a mobile servicing unit shall be stored in the service unit's sludge tank and discharged into the safe holding tank for collection by the specialist oil recycling company. All used filter materials shall be stored in a secure bin for disposal off site. Any contaminated soil shall be removed and replaced. Soils contaminated by oils and lubricants shall be collected and disposed of at a facility designated by the local authority to accept contaminated materials.

H 08.05 Clearing the Site

In all areas where the contractor intends to, or is required to clear the natural vegetation and soil, either within the road reserve, or at designated or instructed areas outside the road reserve, a plan of action shall first be submitted to the engineer for his approval.

The plan shall contain a photographic record and chainage/land reference of the areas to be disturbed. This shall be submitted to the engineer for his records before any disturbance/stockpiling may occur. The record shall be comprehensive and clear, allowing for easy identification during subsequent inspections.

The contractor shall be responsible for the re-establishment of grass within the road reserve boundaries for all areas disturbed during road construction. This includes, for example, service roads, stockpile areas, stop/go facilities, windrows and wherever material generated for, or from, road construction has to be stored temporarily or otherwise within the road reserve, or at designated or instructed areas outside the road reserve. This responsibility shall extend until expiry of the defects notification period.

H 08.06 Soil Management

H 08.06.01 Topsoil

Topsoil shall be removed from all areas where physical disturbance of the surface will occur and shall be stored and adequately protected. The contract will provide for the stripping and stockpiling of topsoil from the site for later re-use. Topsoil is considered to be the natural soil covering, including all the vegetation and organic matter. Depth may vary at each site. The areas to be cleared of topsoil shall include the storage areas. All topsoil stockpiles and windrows shall be maintained throughout the contract period in a weed-free condition. Weeds appearing on the stockpiled or windrowed topsoil shall be removed by hand. Soils contaminated by hazardous substances shall be disposed of at an approved Department of Water Affairs and Forestry waste disposal site. The topsoil stockpiles shall be stored, shaped and sited in such a way that they do not interfere with the flow of water to cause damming or erosion, or itself be eroded by the action of water. Stockpiles of topsoil shall not exceed a height of 2m, and if they are to be left for longer than 6 months, shall be analysed, and if necessary, upgraded before replacement. Stockpiles shall be protected against infestation by weeds.

The contractor shall ensure that no topsoil is lost due to erosion – either by wind or water. Areas to be topsoiled and grassed shall be done so systematically to allow for quick cover and reduction in the chance of heavy topsoil losses due to unusual weather patterns. The contractor's programme shall clearly show the proposed rate of progress of the application of topsoil and grassing. The contractor shall be held responsible for the replacement, at his own cost, for any unnecessary loss of topsoil due to his failure to work according to the progress plan approved by the engineer. The contractor's responsibility shall also extend to the clearing of drainage or water systems within and beyond the boundaries of the road reserve that may have been affected by such negligence.

H 08.06.02 Subsoil

The subsoil is the layer of soil immediately beneath the topsoil. It shall be removed, to a depth instructed by the engineer, and stored separately from the topsoil if not used for road building. This soil shall be replaced in the excavation in the original order it was removed for rehabilitation purposes.

H 08.07 Drainage

The quality, quantity and flow direction of any surface water runoff shall be established prior to disturbing any area for construction purposes. Cognisance shall be taken of these aspects and incorporated into the planning of all construction activities. Before a site is developed or expanded, it shall be established how this development or expansion will affect the drainage pattern. Recognised water users / receivers shall not be adversely affected by the expansion or re-development. No water source shall be polluted in any way due to proposed changes.

Streams, rivers, pans, wetlands, dams, and their catchments shall be protected from erosion and from direct or indirect spillage of pollutants such as refuse, garbage, cement, concrete, sewage, chemicals, fuels, oils, aggregate, tailings, wash water, organic materials and bituminous or tar products.

The contractor shall submit to the engineer his proposals for prevention, containment and rehabilitation measures against environmental damage of the identified water and drainage systems that occur on the site. Consideration shall be given to the placement of sedimentation ponds or barriers where the soils are of a dispersive nature or where toxic fluids are used in the construction process. The sedimentation ponds must be large enough to contain runoff so that they function properly under heavy rain conditions.

H 08.08 Earthworks and Layerworks

This section includes all construction activities that involve the mining of all materials, and their subsequent placement, stockpile, spoil, treatment or batching, for use in the permanent works, or temporary works in the case of deviations. Before any stripping prior to the commencement of construction, the contractor shall have complied with the requirements of sections C1008 (e) and C1008 (g). In addition, the contractor shall take cognisance of the requirements set out below.

H 08.08.01 Quarries and borrow pits

The contractor's attention is drawn to the requirement of the Department of Minerals and Energy, that before entry into any quarry or borrow pit, an EMP for the establishment, operation and closure of the quarry or borrow pit shall have been approved by the Department. It is the responsibility of the contractor to ensure that he is in possession of the approved EMP or a copy thereof, prior to entry into the quarry or borrow pit. The conditions imposed by the relevant EMP are legally binding on the contractor and may be more extensive and explicit than the requirements of this specification. In the event of any conflict occurring between the requirements of the specific EMP and these specifications the former shall apply. The cost of complying with the requirements shall be deemed to be included in existing rates in the Bill of Quantities. H 08.08.02 Excavation, hauling and placement

The contractor shall provide the engineer with detailed plans of his intended construction processes prior to starting any cut or fill or layer. The plans shall detail the number of personnel and plant to be used and the measures by which the impacts of pollution (noise, dust, litter, fuel, oil, sewage), erosion, vegetation destruction and deformation of landscape will be prevented, contained and rehabilitated. Particular attention shall also be given to the impact that such activities will have on the adjacent built environment. The contractor shall demonstrate his "good housekeeping", particularly with respect to closure at the end of every day so that the site is left in a safe condition from rainfall overnight or over periods when there is no construction activity.

H 08.08.03 Spoil sites

The contractor shall be responsible for the safe siting, operation, maintenance and closure of any spoil site he uses during the contract period, including the defects notification period. This shall include existing spoil sites that are being re-entered. Before spoil sites may be used proposals for their locality, intended method of operation, maintenance and rehabilitation shall be given to the engineer for his approval. The location of these spoil sites shall have signed approval from the affected landowner before submission to the engineer. No spoil site shall be located within 500m of any watercourse. A photographic record shall be kept of all spoil sites for monitoring purposes. This includes before the site is used and after re-vegetation.

The use of approved spoil sites for the disposal of hazardous or toxic wastes shall be prohibited unless special measures are taken to prevent leaching of the toxins into the surrounding environment. Such special measures shall require the approval of the relevant provincial or national authority. The same shall apply for the disposal of solid waste generated from the various camp establishments. The engineer will assist the contractor in obtaining the necessary approval if requested by the contractor.

Spoil sites will be shaped to fit the natural topography. These sites shall receive a minimum of 75mm topsoil and be grassed with the recommended seed mixture. Slopes shall not exceed a vertical: horizontal ratio of 1:3. Only under exceptional circumstances will approval be given to exceed this ratio. Appropriate grassing measures to minimise soil erosion shall be undertaken by the contractor. This will include both strip and full sodding. The contractor may motivate to the engineer for other acceptable stabilising methods. The engineer may only approve a completed spoil site at the end of the defects notification period upon receipt from the contractor of a landowner's clearance notice and an engineer's certificate certifying slope stability. The contractor's costs incurred in obtaining the necessary certification for opening and closing of spoil sites shall be deemed to be included in the tendered rates for spoiling.

H 08.08.04 Stockpiles

The contractor shall plan his activities so that materials excavated from borrow pits and cuttings, in so far as possible, can be transported direct to and placed at the point where it is to be used. However, should temporary stockpiling become necessary, the areas for the stockpiling of excavated and imported material shall be indicated and demarcated on the site plan submitted in writing to the engineer for his approval, together with the contractor's proposed measures for prevention, containment and rehabilitation against environmental damage.

The areas chosen shall have no naturally occurring indigenous trees and shrubs present that may be damaged during operations. Care shall be taken to preserve all vegetation in the immediate area of these temporary stockpiles. During the life of the stockpiles the contractor shall at all times ensure that they are:

- Positioned and sloped to create the least visual impact;

- Constructed and maintained so as to avoid erosion of the material and contamination of surrounding environment; and
- Kept free from all alien/undesirable vegetation.

After the stockpiled material has been removed, the site shall be re-instated to its original condition. No foreign material generated / deposited during construction shall remain on site. Areas affected by stockpiling shall be landscaped, top soiled, grassed and maintained at the contractor's cost until clearance from the engineer and the relevant Authority is received.

Material milled from the existing road surface that is temporarily stockpiled in areas approved by the engineer within the road reserve, shall be subject to the same condition as other stockpiled materials. Excess materials from windrows, in-situ milling or any detritus of material from road construction activities may not be swept off the road and left unless specifically instructed to do so in the contract drawing or under instruction from the engineer

In all cases, the engineer shall approve the areas for stockpiling and disposal of construction rubble before any operation commences and shall approve their clause only when they have been satisfactorily rehabilitated.

H 08.08.05 Blasting activities

Wherever blasting activity is required on the site (including quarries and/or borrow pits) the contractor shall rigorously adhere to the relevant statutes and regulations that control the use of explosives. In addition, the contractor shall, prior to any drilling of holes in preparation for blasting, supply the engineer with a locality plan of the blast site on which shall be shown the zones of influence of the ground and air shock-waves and expected limits of fly-rock. The plan shall show each dwelling, structure and service within the zones of influence and record all details of the dwellings/structures/services including existing positions, lengths and widths of cracks, as well as the condition of doors, windows, roofing, wells, boreholes etc. The contractor, alone, shall be responsible for any costs that can be attributed to blasting activities, including the collection of fly-rock from adjacent lands and fields. The submission of such a plan shall not in any way absolve the contractor from his responsibilities in this regard. The contractor shall also indicate to the engineer the manner in which he intends to advertise to the adjacent communities and/or road users the times and delays to be expected for each individual blast.

H 08.09 Batching sites

Asphalt plants are considered scheduled processes listed in the second schedule to the Atmospheric Pollution Prevention Act, 1965 (Act No. 45 of 1965). Should the use of an asphalt plant be considered on site, the contractor shall be responsible to obtain the necessary permit from the Department of Environmental Affairs and Tourism, regardless of where they are sited.

Crushing plants and concrete batching plants, whether sited inside or outside of defined quarry or borrow pit areas, shall be subject to the requirements of the Department of Minerals and Energy legislation as well as the applicable industrial legislation that governs gas and dust emissions into the atmosphere. Such sites will be the subject of regular inspections by the relative authorities during the life of the project. In addition, the selection, entry onto, operation, maintenance, closure and rehabilitation of such sites shall be the same as for those under section C1008(h)(iii), with the exception that the contractor shall provide additional measures to prevent, contain and rehabilitate against environmental damage from toxic/hazardous substances. In this regard the contractor shall provide plans that take into account such additional measures as concrete floors, bunded storage facilities, linings to drainage channels and settlement dams. Ultimate approval of these measures shall be from the relevant national authority, as shall approval of closure. The engineer will assist the contractor in his submissions to the relevant authority.

Effluent from concrete batch plants and crusher plants shall be treated in a suitable designated sedimentation dam to the legally required standards to prevent surface and groundwater pollution. The designs of such a facility should be submitted to the engineer for approval.

The contractor shall invite the relevant department to inspect the site within 2 months after any plant is commissioned and at regular intervals thereafter, not exceeding 12 months apart

H 08.10 Spillages

Streams, rivers and dams shall be protected from direct or indirect spillage of pollutants such as refuse, garbage, cement, concrete, sewage, chemicals, fuels, oils, aggregate, tailings, wash water, organic materials and tar or bituminous products. In the event of a spillage, the contractor shall be liable to arrange for professional service providers to clear the affected area.

Responsibility for spill treatment lies with the contractor. The individual responsible for, or who discovers a hazardous waste spill must report the incident to his/her DEO or to the engineer. The Designated Environmental Officer will assess the situation in consultation with the engineer and act as required. In all cases, the immediate response shall be to contain the spill. The exact treatment of polluted soil / water shall be determined by the contractor in consultation with the DEO and the engineer. Areas cleared of hazardous waste shall be re-vegetated according to the engineer's instructions

Should water downstream of the spill be polluted, and fauna and flora show signs of deterioration or death, specialist hydrological or ecological advice will be sought for appropriate treatment and remedial procedures to be followed. The requirement for such input shall be agreed with the engineer. The costs of containment and rehabilitation shall be for the contractor's account, including the costs of specialist input.

H 08.11 Areas of Specific Importance

Any area, as determined and identified within the project document as sensitive or of special interest within the site shall be treated according to the express instructions contained in these specifications or the approved EMP. The contractor may offer alternative solutions to the engineer in writing should he consider that construction will be affected in any way by the hindrance of the designated sensitive area or feature. However, the overriding principle is that such defined areas requiring protection shall not be changed. Every effort to identify such areas within the site will have been made prior to the project going out to tender. The discovery of other sites with archaeological or historical interest that have not been identified shall require ad hoc treatment.

H 08.11.01 Archaeological Sites

If an artefact on site is uncovered, work in the immediate vicinity shall be stopped immediately. The contractor shall take reasonable precautions to prevent any person from removing or damaging any such article and shall immediately upon discovery thereof inform the engineer of such discovery. The National Monuments Council is to be contacted who will appoint an archaeological consultant. Work may only resume once clearance is given in writing by the archaeologist.

H 08.11.02 Graves and middens

If a grave or midden is uncovered on site, or discovered before the commencement of work, then all work in the immediate vicinity of the graves/middens shall be stopped and the engineer informed of the discovery. The National Monuments Council should be contacted and in the case of graves, arrangements made for an undertaker to carry out exhumation and reburial. The undertaker will, together with the National Monuments Council, be responsible for attempts to contact family of the deceased and for the site where the exhumed remains can be re-interred.

H 08.12 Noise Control

The contractor shall endeavour to keep noise generating activities to a minimum. Noises that could cause a major disturbance, for instance blasting and crushing activities, should only be carried out during daylight hours. Compliance with the appropriate legislation with respect to noise, shall be mandatory.

Should noise generating activities have to occur at night the people in the vicinity of the drilling shall be warned about the noise well in advance and the activities kept to a minimum.

H 08.13 Dust Control

Dust caused by strong winds shall be controlled by means of water spray vehicles. Dust omission from batching plants shall be subject to the relevant legislation and shall be the subject of inspection by the relevant office of the Department of Minerals and Energy.

H 08.14 Alien Vegetation

The contractor shall be held responsible for the removal of alien vegetation within the road reserve disturbed during road construction. This includes, for example, service roads, stockpile areas, stop/go facilities, windrows and wherever material generated for or from road construction has been stored temporarily or otherwise within the road reserve. This responsibility shall extend for the duration of the defects notification period.

H 09 RECORD KEEPING

The engineer and the DEO will continuously monitor the contractor's adherence to the approved impact prevention procedures and the engineer shall issue to the contractor a notice of non-compliance whenever transgressions are observed. The DEO should document the nature and magnitude of the non-compliance in a designated register, the action taken to discontinue the non-compliance, the action taken to mitigate its effects and the results of the actions. The non-compliance shall be documented and reported to the engineer in the monthly report.

Copies of any record of decision or EMP's for specific borrow pits or quarries used on the project shall be kept on site and made available for inspection by visiting officials from the employer or relevant environmental departments.

H 10 COMPLIANCE AND PENALTIES

The contractor shall act immediately when such notice of non-compliance is received and correct whatever is the cause for the issuing of the notice. Complaints received regarding activities on the construction site pertaining to the environment shall be recorded in a dedicated register and the response noted with the date and action taken. This record shall be submitted with the monthly reports and a verbal report given at the monthly site meetings.

Any avoidable non-compliance with the above-mentioned measures shall be considered sufficient ground for the imposition of a penalty

The following penalties shall apply for environmental violations:

H 10.01 Unnecessary removal or damage to trees

| | | |
|---|---|------------------|
| • 2600mm girth or less | : | R 5 000 per tree |
| • Greater than 2600mm, but less than 6180mm girth | : | R10 000 per tree |
| • Greater than 6180mm girth | : | R30 000 per tree |

H10.02 Serious violations:

| | | |
|--|---|-------------------------------|
| • Hazardous chemical/oil spill and/or dumping in non-approved sites. | : | R10 000 per incident |
| • General damage to sensitive environments. | : | R 5 000 per incident |
| • Damage to cultural and historical sites. | : | R 5 000 per incident |
| • Uncontrolled/unmanaged erosion (plus rehabilitation at contractor's cost). | : | R1 000 to R5 000 per incident |
| • Unauthorised blasting activities. | : | R 5 000 per incident |
| • Pollution of water sources. | : | R 10 000 per incident |

The engineer's decision with regard to what is considered a violation, its seriousness and the penalty imposed shall be final.

H10.03 Less serious violations:

| | | |
|---|---|---------------------|
| • Littering on site. | : | R1 000 per incident |
| • Lighting of illegal fires on site. | : | R1 000 per incident |
| • Persistent or un-repaired fuel and oil leaks. | : | R1 000 per incident |

| | | |
|--|--------------------|---------------------|
| • Excess dust or excess noise emanating from site. | : | R1 000 per incident |
| • Dumping of milled material in side drains or on grassed areas: | | R1 000 per incident |
| • Possession or use of intoxicating substances on site.: | R 500 per incident | |
| • Any vehicles being driven in excess of designated speed limits. | : | R 500 per incident |
| • Removal and/or damage to flora or cultural or heritage objects on site, and/or killing of wildlife | : | R2 000 per incident |
| • Illegal hunting. | : | R2 000 per incident |
| • Urination and defecation anywhere except in designated areas. | : | R 500 per incident |

The engineer's decision with regard to what is considered a violation, its seriousness and the penalty imposed shall be final. The imposition of such a penalty shall not preclude the relevant provincial or national authority from applying an additional penalty in accordance with its statutory powers. Any non-compliance with the agreed procedures of the EMP is a transgression of the various statutes and laws that define the manner by which the environment is managed.

Failure to redress the cause shall be reported to the relevant authority for them to deal with the transgression, as it deems fit.

H 11 MEASUREMENT AND PAYMENT

| Item | Unit |
|---|-------------|
| H 11.01 Penalty for unnecessary removal or damage to trees for the following diameter sizes: | |
| (a) 2600mm girth or less | number (No) |
| (b) Greater than 2600mm, but less than 6180mm girth | number (No) |
| (c) Greater than 6180mm girth | number (No) |

The unit of measurement shall be the number of trees by diameter size removed unnecessary or damaged. The penalty rates applied shall be those stated in clause H 10.01

| Item | Unit |
|--|-------------|
| H 11.02 Penalty for serious violations | |
| (a) Hazardous chemical/oil spill and/or dumping in non-approved sites | number (No) |
| (b) General damage to sensitive environments | |
| (c) Damage to cultural and historical sites | number (No) |
| (d) Pollution of water sources | number (No) |
| (e) Unauthorised blasting activities | number (No) |
| (f) Uncontrolled/unmanaged erosion per incident, depending on environment impacts, plus rehabilitation at contractor's cost) | number (No) |

The unit of measurement for H 11.02 (a) to (f) shall be the number of serious violation incidents. The penalty rates to be applied shall be those stated in clause H 10.02.

| Item | Unit |
|---|-------------|
| H 11.03 Penalty for less serious violations | |
| (a) Littering on site | number (No) |
| (b) Lighting of illegal fires on site | number (No) |
| (c) Persistent or un-repaired fuel and oil leaks | number (No) |
| (d) Excess dust or excess noise emanating from site | number (No) |
| (e) Dumping of milled material in side drains or on grassed | |

| | | |
|-----|--|-------------|
| | areas | number (No) |
| (f) | Possession or use of intoxicating substances on site | number (No) |
| (g) | Any vehicles being driven in excess of designated speed limits | number (No) |
| (h) | Removal and/or damage to flora or cultural or heritage objects on site, and/or killing of wildlife | number (No) |
| (i) | Illegal hunting | number (No) |
| (j) | Urination and defecation anywhere except in designated areas | number (No) |

The unit of measurement shall be the number of less serious violation incidents. The penalty rates applied shall be those stated in clause H 10.03.

The engineer's decision with regard to what is considered a violation, its seriousness and the penalty imposed shall be final. The imposition of such a penalty shall not preclude the relevant provincial or national authority from applying an additional penalty in accordance with its statutory powers. Any non-compliance with the agreed procedures of the EMP is a transgression of the various statutes and laws that define the manner by which the environment is managed.

Failure to redress the cause shall be reported to the relevant authority for them to deal with the transgression, as it deems fit.

| Item | Unit |
|--|-------|
| H 11.04 Contractor's time related obligations in respect of Environmental management plans and specifications | month |

The tendered monthly amount shall represent full compensation for that part of the contractor's general obligations in terms of the environmental management plans and specifications which are mainly a function of time. This includes inter alia payment of all costs of the approved designated environmental office (DEO) and other staff contemplated in the administration of the environmental obligations, including the transport of employees on site. Payment will be monthly.



Table 1: Mechanisms that Cause Environmental Impacts during Construction Activities

| SECTION | CONTENTS | ENVIRONMENTAL IMPACTS | | | | |
|---------|-----------------------------------|---|---|---|---|--|
| | | POLLUTION TYPE | DEFORMATION OF LANDSCAPE | SOIL EROSION | ALIEN VEGETATION | SENSITIVE AREAS (to be completed by compiler) |
| 1300 | Camp Establishment | Waste treatment Hazardous waste Water supply Spillage Storage | Selection of site Preserve indigenous vegetation Preserve topsoil | Selection of site Preserve indigenous vegetation Preserve topsoil | Preserve indigenous vegetation Preserve topsoil Management of weeds | |
| 1400 | Housing, Offices and laboratories | Waste treatment Hazardous waste Water supply Spillage Storage Noise/lights | Selection of site Preserve indigenous vegetation Preserve topsoil Demarcate sensitive areas | Selection of site Preserve indigenous vegetation Preserve topsoil | Preserve indigenous vegetation Preserve topsoil Management of weeds | |
| 1500 | Accommodation of Traffic | Waste treatment Hazardous waste Water supply Spillage Storage Noise/lights Dust control | Selection of site Preserve indigenous vegetation Preserve topsoil Demarcate sensitive areas Maintenance of windrows | Selection of site Preserve indigenous vegetation Preserve topsoil | Preserve indigenous vegetation Preserve topsoil Management of weeds | |
| 1600 | Overhaul | Spillage Storage Noise/lights Dust control Exhaust fumes Washing waste | Turning circles Parking areas | Restrict access to sensitive areas | Protection of indigenous vegetation Preserve topsoil | |
| 1700 | Clearing and grubbing | Waste treatment Hazardous waste | Selection of site | Selection of site | Protection of indigenous vegetation | |



Metsimaholo Local Municipality
 Re-advert: Appointment of a 7 CE/GB or higher CIDB registered contractor
 for the construction of toilets and sewer network repair in Gortin phase 1.

Tender No.:
23/2023/24

| SECTION | CONTENTS | ENVIRONMENTAL IMPACTS | | | | |
|----------------|----------|---|---|---|---|--|
| | | POLLUTION TYPE | DEFORMATION OF LANDSCAPE | SOIL EROSION | ALIEN VEGETATION | SENSITIVE AREAS (to be completed by compiler) |
| | | Water supply Noise /lights Dust control | Preserve indigenous vegetation Preserve topsoil | Preserve indigenous vegetation Preserve topsoil | Preserve topsoil | |
| 2100 - 2400 | Drainage | Waste treatment Hazardous waste Water supply Spillage Storage | Selection of site Preserve indigenous vegetation Preserve topsoil | Selection of site Preserve indigenous vegetation Preserve topsoil | Preserve indigenous vegetation Preserve topsoil Management of weeds | |



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for the construction of toilets and sewer network repair in Gortin phase 1.

Tender No.:
23/2023/24

| | | | | | | |
|----------------|-----------------|---|--|--|--|--|
| 3100 | Borrow pits | Waste treatment Hazardous waste Water supply Spillage Storage | Selection of site Preserve indigenous vegetation Preserve topsoil | Selection of site Preserve indigenous vegetation Preserve topsoil | Preserve indigenous vegetation Preserve topsoil Management of weeds | |
| 3200 | Stockpiling | Waste treatment Hazardous waste Water supply Spillage Storage | Selection of site Preserve indigenous vegetation Preserve topsoil | Selection of site Preserve indigenous vegetation Preserve topsoil | Preserve indigenous vegetation Preserve topsoil Management of weeds | |
| 3300 | Mass Earthworks | Waste treatment Hazardous waste Water supply Spillage Storage | Selection of site Preserve indigenous vegetation Preserve topsoil | Selection of site Preserve indigenous vegetation Preserve topsoil | Preserve indigenous vegetation Preserve topsoil Management of weeds | |
| 3400 - 3900 | Pavement layers | Waste treatment Hazardous waste Water supply Spillage Storage Noise / lights Dust control | Selection of site Preserve indigenous vegetation Preserve topsoil Demarcate sensitive areas Maintenance of windrows | Selection of site Preserve indigenous vegetation Preserve topsoil | Preserve indigenous vegetation Preserve topsoil Management of weeds | |



Metsimaholo Local Municipality
Re-advert: Appointment of a 7 CE/GB or higher CIDB registered contractor
for the construction of toilets and sewer network repair in Gortin phase 1.

Tender No.:
23/2023/24

| | | | | | | |
|------|--|--|--|--|--|--|
| 4100 | Asphalt works / sealing operations | Waste treatment Hazardous waste Water supply Spillage Storage Noise / lights Dust control Smoke control Storage of materials | Selection of site Preserve indigenous vegetation Preserve topsoil Turning circles Parking areas | Selection of site Preserve indigenous vegetation Preserve topsoil | Preserve indigenous vegetation Preserve topsoil | |
| 5000 | Ancillary roadworks | Waste treatment Hazardous waste Water supply Spillage Storage | Selection of site Preserve indigenous vegetation Preserve topsoil | Selection of site Preserve indigenous vegetation Preserve topsoil | Preserve indigenous vegetation Preserve topsoil Management of weeds | |
| 6000 | Structures | Waste treatment Hazardous waste Water supply Spillage Storage | Selection of site Preserve indigenous vegetation Preserve topsoil | Selection of site Preserve indigenous vegetation Preserve topsoil | Preserve indigenous vegetation Preserve topsoil Management of weeds | |
| 7000 | Concrete pavements etc | Waste treatment Hazardous waste Water supply Spillage Storage | Selection of site Preserve indigenous vegetation Preserve topsoil | Selection of site Preserve indigenous vegetation Preserve topsoil | Preserve indigenous vegetation Preserve topsoil Management of weeds | |

C4 Site Information

C4.1 Scope of Site Information

Locality

The project location is about 12.5km to the North West of Sasolburg. The project is located between Zamdela, Gortin Phase 1. The proposed development investigated falls under the jurisdiction of Metsimaholo Local Municipality which is within Fezile Dabi District Municipality

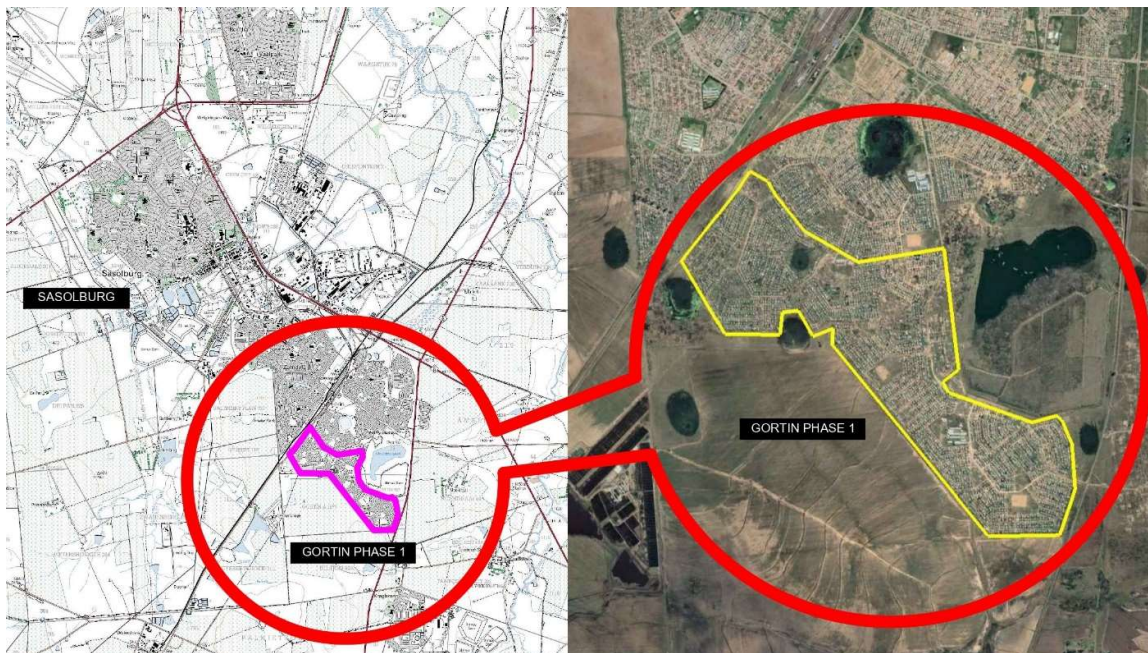


Figure 1: Locality Map

Table 1:Co-Ordinate Table

| Topographic sheet: | 2627DD | |
|--------------------|--------------|---------------|
| Area | Longitude: | Latitude: |
| Zamdela, Sasolburg | 27°52'9.26"E | 26°51'58.42"S |

The proposed development is found in the Metsimaholo Local Municipality which is within Fezile Dabi District Municipality. The proposed project is found in ward 1 of the municipality.

Topography

The topographical profile of the area is considered relatively flat with the highest point being the edge of the development at 1491m a.m.s.l, while the lowest point is at the other end of the development is 1473m a.m.s.l. The average grade of the area is 1.2%. The area generally slopes from North to South with the highest areas located at the North Western Sections.

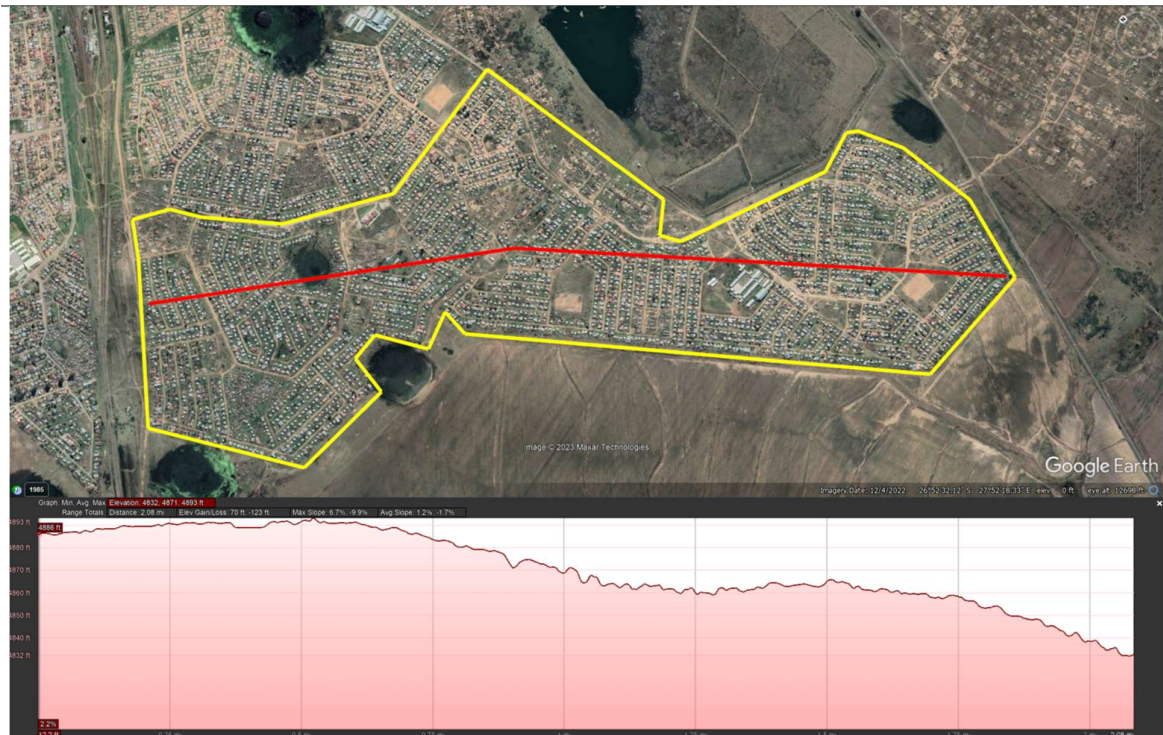


Figure 2: Profile of the development

Climate and weather conditions

The project is located in Sasolburg which normally receives about 776mm of rain per year, with most rainfall occurring mainly during summer. It receives the lowest rainfall (8mm) in July and the highest rainfall (143mm) in December. The monthly distribution of average daily maximum temperatures shows that the average midday temperatures range from 6°C in Winter to 25°C in Summer. The climatic N-value (Weinert, 1980) of the area is between 1 and 3.

| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|-------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Avg. Temperature (°C) | 21.1 | 20.8 | 19.5 | 16.6 | 13.3 | 10.2 | 9.9 | 13.4 | 17.4 | 19.6 | 20.2 | 21.1 |
| Min. Temperature (°C) | 16 | 15.7 | 14.1 | 10.8 | 6.8 | 3.5 | 2.7 | 5.7 | 9.5 | 12.5 | 14 | 15.7 |
| Max. Temperature (°C) | 26.6 | 26.3 | 25.2 | 22.7 | 20.4 | 17.9 | 17.9 | 21.5 | 25.4 | 26.9 | 26.8 | 26.9 |
| Average Rainfall Days | 12 | 10 | 9 | 5 | 3 | 1 | 1 | 2 | 3 | 8 | 9 | 12 |
| Precipitation / Rainfall (mm) | 138 | 111 | 94 | 44 | 19 | 8 | 4 | 13 | 21 | 77 | 104 | 143 |

Figure 3: Sasolburg Climatic Condition

The area investigated has a summer rainfall, and a relatively dry winter. According to the Weinert's N-value chart, the region is situated on Weinert's N-value between 2 and 5. It has Thornthwaite's value of between -20 to 20, thus climatic region is classified as sub-humid warm climate See figure below.

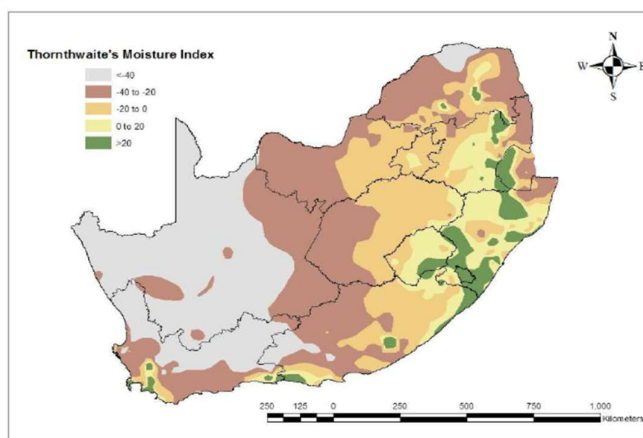


Figure 4: Thornthwaite's Moisture Index for South Africa (Source - SAPEM)

Table 2: Thornthwaite's Moisture Index for Climatic Areas

| Index Range | Climatic Region | |
|-------------|-----------------|----------|
| < -40 | Arid | Dry |
| -40 to -20 | Semi-arid | |
| -20 to 0 | Dry Sub-humid | Moderate |
| 0 to 20 | Moist Sub-humid | |
| 20 to 100 | Humid | Wet |
| > 100 | Per humid | |

The weather and climatic information will assist the Contractor in planning the works to be constructed to ensure that work that falls within the critical path of the project is not affected by weather and there are fewer weather-related claims.

Current Land Use

The town owes its existence to the petro-chemical industry. Its refinery is one of the only two viable coal-derived oil refineries in the world (the other is at Secunda in Mpumalanga). The town was established in the early 1950s in order to provide housing and facilities for SASOL (South African Coal, Oil & Gas) employees.

The town has won the prize for the most attractive town entrance several years in a row and is a leader in environmental awareness as statistics show there are more trees and shrubs in the town. (Source: www.freestatetourism.org)

There are no foreseeable implications for this development as far as current land use is concerned. There will be no rezoning that will be required because the boundaries of the area already consist of housing. **Figure 5** shows the current land use in the proposed development site. The area has existing houses and the objective of the project will be to build formal ablution block units in this area to improve development.

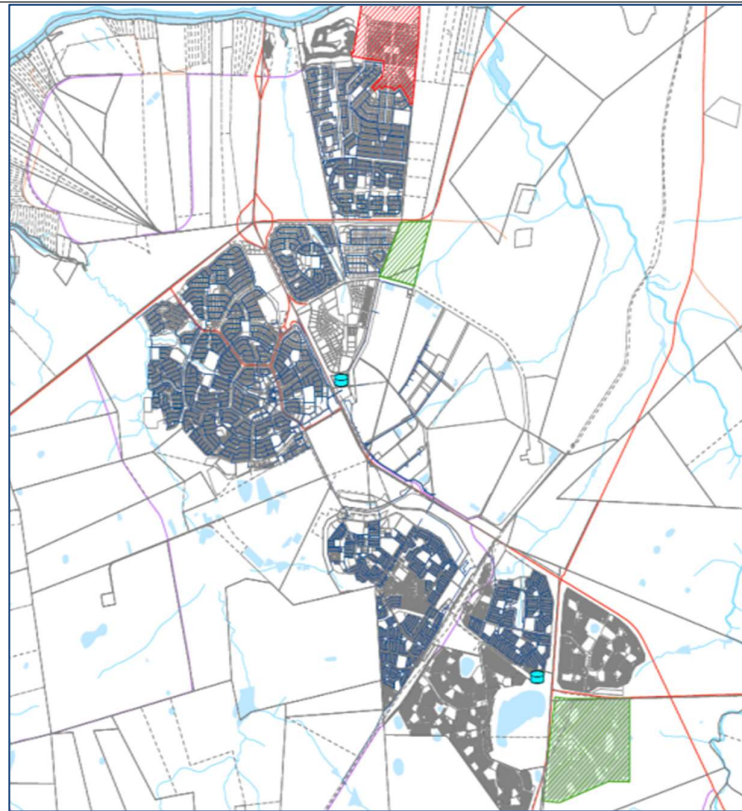


Figure 5: Land Use

Land use control on the numerous small holdings and small farms is problematic and exclusion thereof as agricultural land and inclusion in either the Sasolburg or Deneysville scheme boundaries, is deemed inevitable.

A pertinent need for a well-developed communal garden exists in the Zamdela precinct. Undermined land in close proximity of the urban area, could be utilised for urban agriculture and small scale farming activities, including:

- Undermined land adjacent Zamdela (several farms 29, mainly commonage at present)
- Portions of the Farm Mooidraai 44, opposite the Heilbron Road not occupied by the current urban expansion of Zamdela (Mooidraai Extension).
- The Farm Bequest 1548 (council owned), south of the Mooidraai Extension.



METSIMAHOLO LOCAL MUNICIPALITY

**RE-ADVERT: APPOINTMENT OF A 7 CE/GB OR HIGHER CIDB REGISTERED
CONTRACTOR FOR THE CONSTRUCTION OF TOILETS AND SEWER NETWORK
REPAIR IN GORTIN PHASE 1.**

BID NO.: 23/2023/24

PART C5.1
GEOTECHNICAL REPORT



Report Prepared For: LEKO CONSULTING ENGINEERS (Pty) Ltd

Report Prepared By: BLACKROCKLAB (Pty) Ltd

Report No: BIV2329 Rev 00

**SASOLBURG ZAMDELAGORTIN PHASE 1, TOILETS
GEOTECHNICAL CENTRELINE REPORT
LEKO CONSULTING ENGINEERS (Pty) Ltd
15 JANUARY 2023**

Email: info@blackrocklab.co.za | Website: www.blackrocklab.co.za

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MATERIAL LABORATORY & GEOTECHNICAL SERVICES

15 JANUARY 2023

LEKO CONSULTING ENGINEERS (PTY)LTD

862 Bernard Street
Garsfontain
Pretoria
0081

Att: LEKO CONSULTING ENGINEERS (PTY)LTD MESSRS

REF: PROJECT INFO: GEOTECHNICAL INVESTIGATION CENTRELINE OF TOILETS AT SASOLBURG ZAMDELA, GORTIN PHASE 1.

Dear Sir/Madam,

Blackrocklab (Pty)ltd was appointed by LEKO CONSULTING ENGINEERS on the 15 January 2024, to provide professional services of offering geotechnical investigation centerline of construction of toilets at Sasolburg Zamdela, Gortin Phase1 under Metsimaholo local municipality.

On behalf of Blackrocklab (Pty) Ltd., it gives us immense pleasure to let you know that we performed the work at the level of highest professionalism.

The work is exactly what we have prepared to perform and hoped at our best. We are confident that you will be grateful of our significant contribution to the project, and we are grateful for the opportunity you have given us. As part of our Desktop and project initiation engaged with stakeholders Mr I Bogoshi to get access to perform the work, which all went well with his presence on site on the day of work.

With other challenges we are pleased that the work was timeously executed. We look forward to working with you and your fine team in future. I appreciate your confidence in us.

T Ramabulana
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|-------------|-----------------|--------------|----------------|-----------------------|
| 0 | 29 January 2024 | T Ramabulana | M.H Nemafohoni | M Mokhobo |

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- Appendix A: Test Pit Profiles and Photographs
- Appendix B: DCP Test Results
- Appendix C: Laboratory Test Results

Table 1:List of Acronyms

| Acronym | Description |
|----------------|--|
| AASHTO | American Association of State Highway and Transportation Officials |
| ASTM | American Society for Testing and Materials |
| C | Cohesion (kPa) |
| CBR | California Bearing Ratio |
| COLTO | Commission of Land Transport Officials |
| COTO | Committee of Transport Officials |
| DCP | Dynamic Cone Penetrometer |
| E | Young's modulus (MPa) |
| FOS | Factor of Safety |
| G | Gravitational acceleration of the Earth (9.8m/s ²) |
| kPa | Kilo Pascal |
| M | Metre |
| Mm | Millimetre |
| MOD | Moisture-density |
| MPa | Mega Pascal |
| NGL | Natural Ground Level |
| PI | Plasticity Index |
| q _a | Allowable bearing capacity (kPa) |
| SAICE | South African Institution of Civil Engineering |
| SANS | South African National Standard |
| TLB | Tractor Loader Backhoe |
| TMH | Technical Methods for Highways |
| TP | Test pit |
| TRH | Technical Recommendations for Highways |
| USCS | Unified Soil Classification System |
| φ | Internal degree of friction (°) |
| γ | Unit weight (kN/m ³) |
| NHBRC | National Home Registration Council |

1. INTRODUCTION

Blackrocklab (Pty) Ltd was appointed in January 2024 by Leko Consulting Engineers (Pty) Ltd to carry out a geotechnical investigation on construction of toilets in Gortin phase1 under Metsimagolo local municipality at Sasolburg area in which is located approximately 12.3 km East of Sasolburg Central Business District (CBD) zone, in Free State Province. Eastern of Sasolburg CBD zone, in Free State Province, [Latitude: 26°51'58.42"S Longitude: 27°52'9.26"E].

The geotechnical investigation comprised of ground investigating of construction area where there will be construction of toilets at Gortin phase1 at Sasolburg area.

The proposed construction comprises of toilets construction with no basement levels and pipeline.

2. TERMS OF REFERENCE

The geotechnical investigation was conducted in January 2023 and was aimed at providing information in terms of:

- Provide a description of the subsurface profile including the identification of any problematic soils.
- Provide a site class designation for the development.
- Provide recommendations and comments on site preparation.
- Recommend appropriate foundation system/s for the proposed office accommodation and to provide allowable bearing capacity and estimate settlements.
- Assess the groundwater level beneath the site at the time of the investigation, if encountered.
- Geological profile underlying the investigated road and building and parking area.
- Assessment of the suitability of in-situ soils to be used in road layer works.
- Excavatability of material on-site.

The details and results of the work undertaken for the site are given in this report, together with comments and recommendations on the issues listed above.

3. AVAILABLE INFORMATION

The following information/documentation was used for the execution of the investigation and the writing of this report:

- SANS 634 (2012), Geotechnical Investigations for Township Development.
- SANS 10400 Part H (2012), National Building Regulations.
- SAICE Site Investigation Code of Practice (2010).
- NHBC Home Building Manual (2012).
- 1:250 000 geological map sheet (2428) Modimolle Map Sheet

4. SITE LOCATION AND GEOLOGY

4.1 SITE

The site is located at the outskirts of town, approximately Eastern, of the Sasolburg CBD in Free State Province as indicated in the locality plan in Figure 1. The Sasolburg Zamdela Gortin phase 1 toilet has access from regional highway R82 road from Parys and R57 road from Vanderbijlpark. A closer aerial view of the access roads is shown in Figure 2.

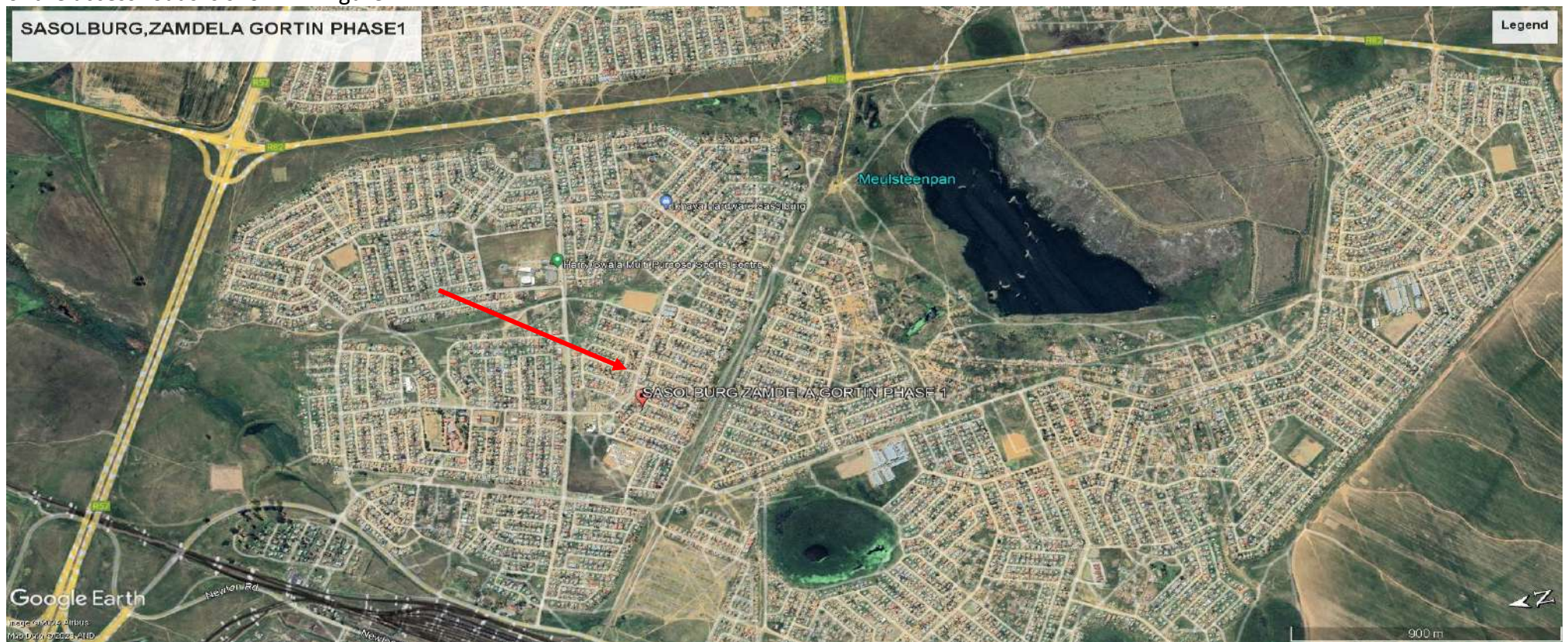


Figure 1: Location of the Sasolburg Zamdela Gortin Phase 1 Toilet, Free State Province.

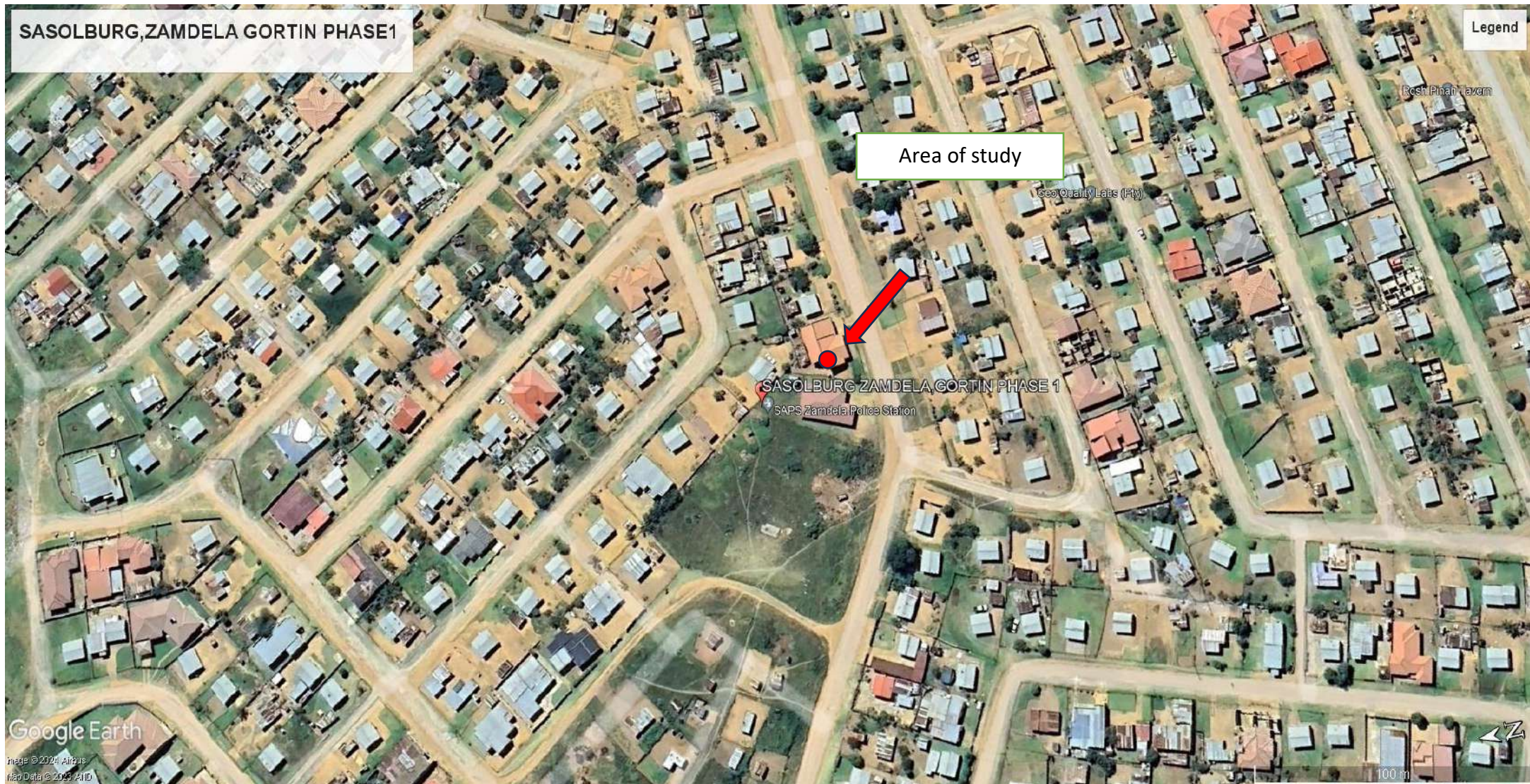


Figure 2:A close view location of the Sasolburg Zamdela, Gortin Phase 1 Toilet.

5. SERVICES AND UTILITIES

There were no maps/documents provided to Blackrocklab Pty (Ltd) indicating existing services within or around the site. However, existing buildings, electricity and water connection were observed on the site near the eastern, western and centre of the site within the existing developed area. It is recommended that a detailed survey of services /services screening be conducted prior to construction activities.

6. REGIONAL GEOLOGY

According to the 1:250 000 geological map sheet 2728 FRANKFORT Sheet, the site is covered by Clay, mottled clay and sand. The transported materials are in light brown and black clay.

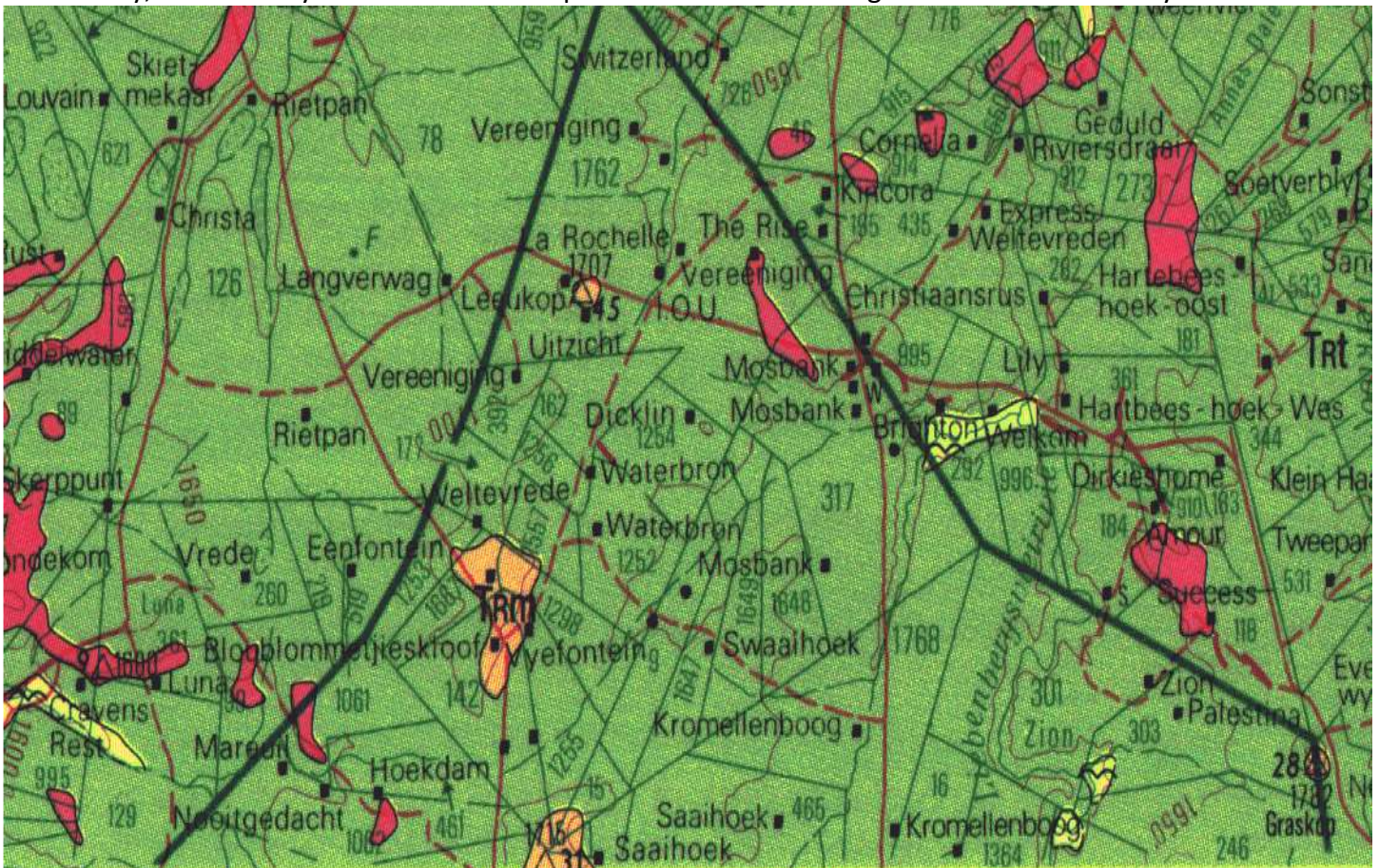


Figure 3: Frankfort (2728) Regional Map Sheet.



TRT- Fine to coarse grained sand stone, grey mudstone and shale & Brownish red mudstones interbedded fine grained reddish sandstone



TRM- Fine to coarse-grained sandstone, grey mudstone and shale

7. WEATHERING

The type and rate of rock weathering are determined by the climate of an area. Weinert (1980) developed an N-value system, which is used to derive the type of weathering likely to occur in an area based on micro-climatic conditions (evaporation and rainfall). Mechanical weathering is likely to occur in locations where $N > 5$, while chemical weathering occurs in regions where $N < 5$.

An N-value of 2-5 was determined for this site, using the diagram provided in Figure 4 (TRH 4, 1996) it shows that the region is Moderate. This indicates that chemical weathering conditions are expected to occur on the site and that rock and soil are therefore expected to be subject to predominantly to mechanical weathering.

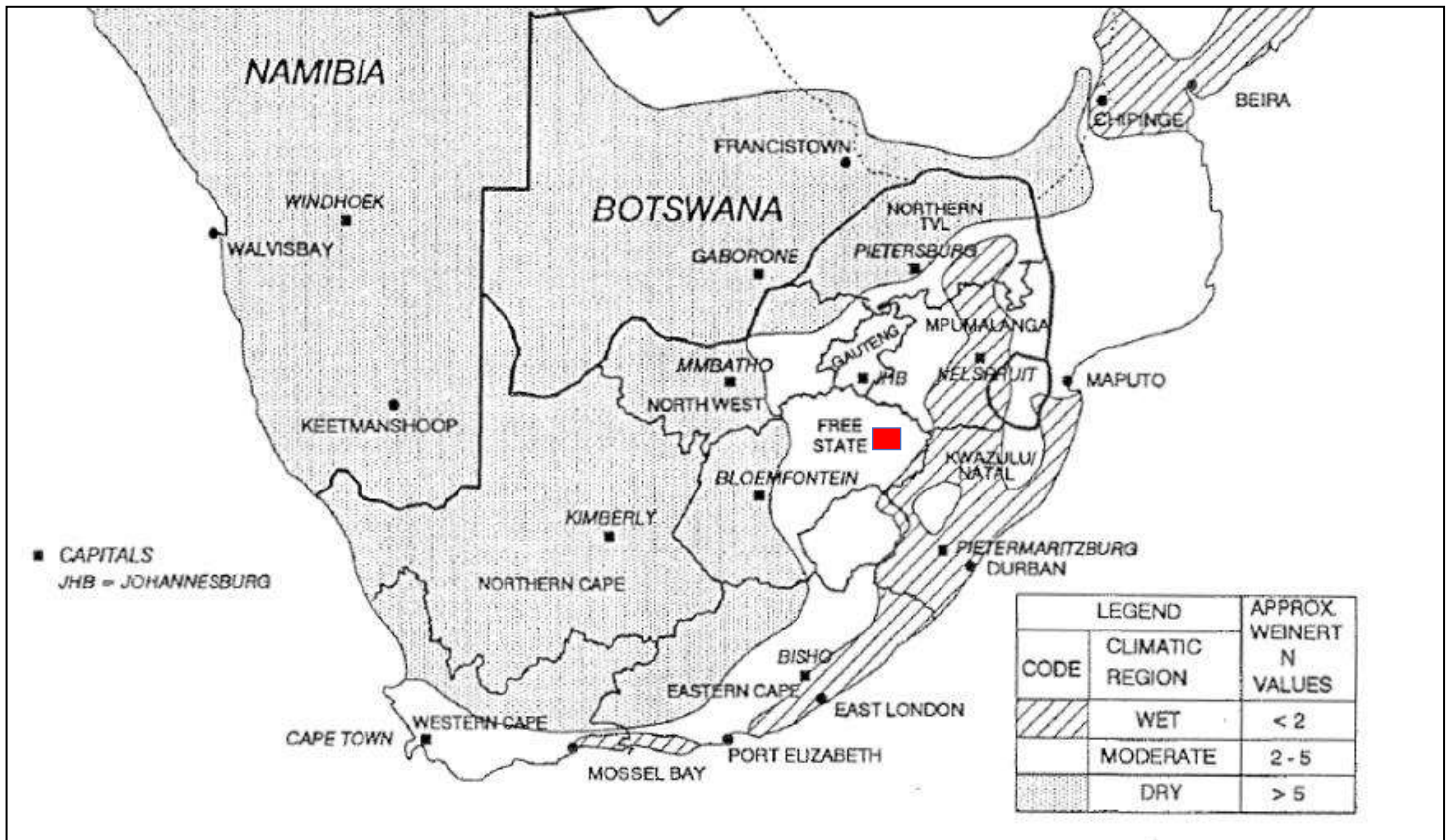


Figure 4: Macro-Climatic regions of South Africa (TRH 4, 1996 adapted from Weinert, 1980).

8. SEISMICITY

According to the Seismic Hazard Map of South Africa (Kijko et al., 2003), the peak ground acceleration is between 0.0387g – 0.0478g for the site. The peak ground acceleration may be described as the maximum acceleration of the ground shaking during an earthquake, which has a 10% probability of being exceeded in a 50-year period.

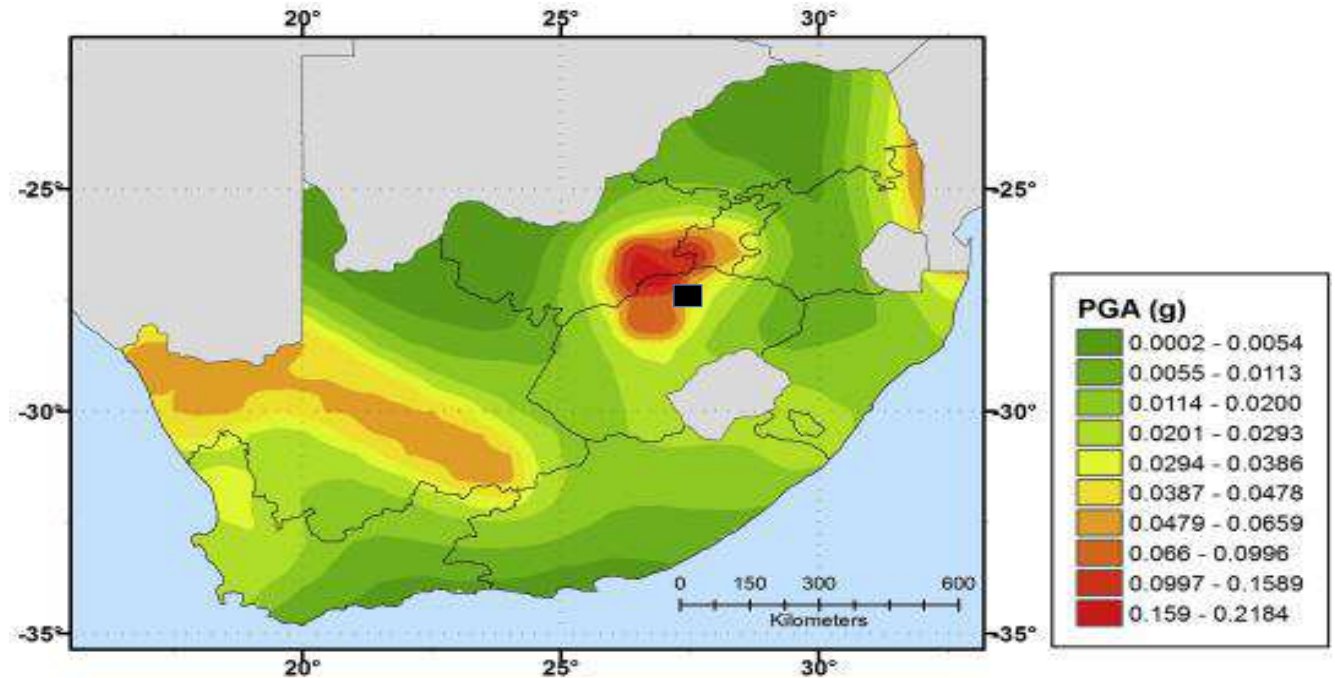


Figure 5: Seismic hazard Map of South Africa (Kijko et al, 2003)

9. CLIMATE

Sasolburg normally receives approximately 549mm of rain per year/annually, with most rainfall occurring during summer session. It receives the lowest rainfall (1mm) in July and the highest (107mm) in December. The average daily maximum temperature for Sasolburg ranges from 18°C in June to 29°C in January and December. The region is coldest during June and July when the average temperature during the night is 2°C.

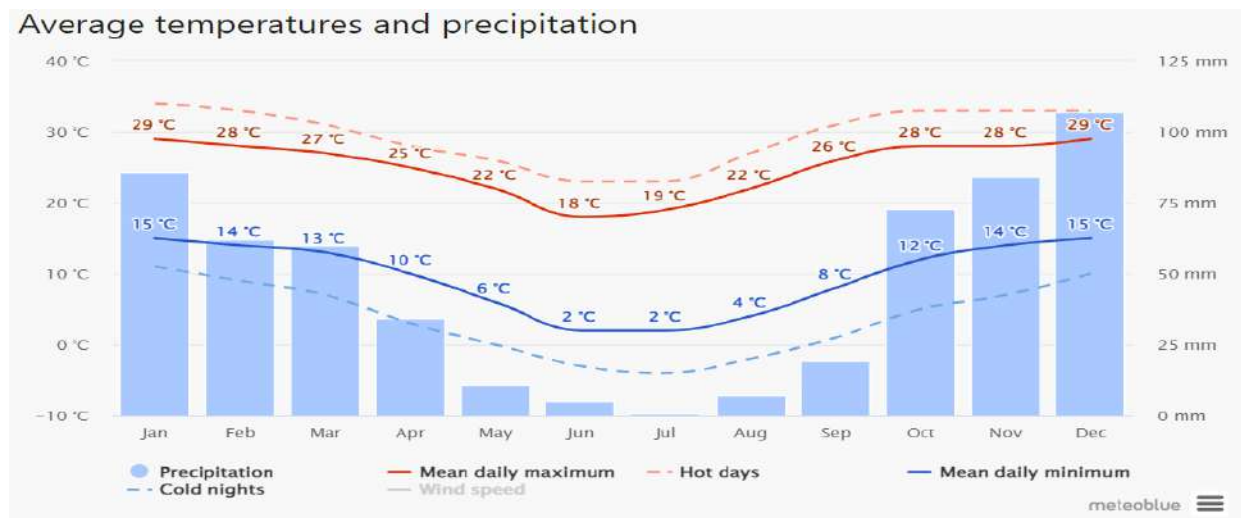


Figure 6: Climate condition summary of Sasolburg.

Weather condition prediction help in project execution, and project scheduling due to that it assists the team to know when to expect un-favorable weather for construction, this is weather like heavy rainfall and wind which in Sasolburg occurs mostly in January and December annually, which cause obstruction and delay in construction. However, we do not have prediction of sudden weather conditions which are unpredictable due that it occurs anytime, but data to guide area weather help in assigning resources and scheduling activity that can't be affected by certain weather condition.

10. GEOTECHNICAL INVESTIGATION

10.1 CURRENT CONDITIONS OF THE AREA

As mentioned above, the investigation comprises of single-storey Sasolburg Zamdela Gorrin Phase 1 structure with no basement levels geotechnical investigation. At the time of the investigation, the existing building structure was in deteriorated condition and no temporary class room are available to be used. The area where single-storey Sasolburg Zamdela Gorrin Phase 1 structure with no basement levels will be constructed in developed area.

The Sasolburg Zamdela Gorrin Phase 1 structure will mostly be used by government staff/ employees, and local students for academic services and other services. At the time of the investigation, the area was in good working condition. However due to that the site is widely underlain by Mottled clay, loam and sand which cause soft excavation.

The region is not traversed by any significant rivers, streams, or erosion channels; instead, erosion occurs through sheetwash. The site comparatively level slope greatly reduces the risk of erosion. The comparatively level terrain could encourage water ponding. As a result, substantial stormwater management must be taken into consideration and the site must be structured to improve stormwater flow. The appropriate competent Person (a specialist in flood lines) must verify all drainage boundaries near moist areas, drainage lines, and flood lines, see **Figure 10**.

However, it is concluded that this won't be major concern due to that the site is underlain by hard material. Loose to dense Mottled Clay, loam and sand was observed along the site. The soil type also plays an important role in the stability of the foundation and erosion on site of both the road and structure. Since the site is underlain by reactive material which may experience ground movement during moisture change, further to this the laboratory results indicate that the material is un-suitable to be used for layer works due to its bearing capacity and quality.



Figure 7: Current condition of Sasolburg Zamdela Gortin Phase1.

The site has reactive soil, with expansion and shrinkage which is bad for foundation settlement. This type of soil is reactive due to that it holds excessive moisture, which cause expansiveness when wet weather is experienced and shrink when is dry weather is experienced, however the type of soil is considered as un-stable due to weak bearing capacity, for carrying heavy load.

10.2 FIELDWORK

The field work for the Sasolburg Zamdela Gorrin Phase 1 geotechnical investigation comprised of the excavation of four test pits and DCP test next to each hole. The hole positions were chosen along area of development could be investigated - see **Figure 8**. The planned excavation depth was $\pm 3\text{m}$, which typically is the maximum reach of TLB excavation, or until effective refusal conditions are encountered. The investigation was conducted according to *SAICE's Site Investigation Code of Practice (2010)* and test pits were profiled by a field engineer in accordance with the current South Africa standard. The positions of the test pits in relation to the construction are shown in **Figure 8**, *Standard procedures as per Brink and Bruin (2002)*. Detailed profiles and photographs are included in the report. General site photographs are included also in the report. The DCP tests were conducted according to the *TMH6 ST 6* standard, and results are included in the report.



Figure 8: Condition of the Sasolburg Zamdela ,Gortin Phase1 at the time of investigation (Free State Province)



Figure 9: Main Location Test Pit Position Along the Sasolburg Zamdela Gortin Phase1.

11. LABORATORY TESTING

A total of 2No soil samples were taken from the 4No test pits and submitted for testing at Langa Geotechnical Services (Pty) Ltd & Blackrocklab (Pty) Ltd. Table-2 summarises the type and quantity of tests requested.

Table 2: Laboratory test schedule summary.

| Type of Test | Quantity |
|----------------------|----------|
| Foundation Indicator | 4 |
| MOD | 4 |
| CBR | 4 |
| PH and Conductivity | 1 |

12. GROUND MODEL

12.1 TEST PIT PROFILES

As previously mentioned above, 4No test pits were excavated along area where the Sasolburg Zamdela, Gortin Phase1 Toilet structure will be constructed. This test pits were generally terminated at a pre-determined depth of 0 – ±3m below the natural ground level (NGL). No difficulties were encountered during the excavation in the area. The profile generally comprises transported soil which is Mottled, clay and silt. Material. All Test pit didn't refuse during excavation, the geological profile observed on the test pits is briefly discussed below and summarized in **Table 3**.

12.2 TRANSPORTED MATERIAL

The investigated area is covered by transported soils, The investigated area is covered by transported soils, which primarily comprise granular materials in the form of silt, sand particles on site. The sandy clay on-site is described as dry to moist, light black with a loose to medium dense soil consistency. The intact soil structure is prevalent on this layer.

Grassroots were present in this layer at the top contact. The transported soil layer varies in thickness from 0 to 1m. Soil samples were taken from this layer for laboratory testing. The test results are discussed in **Section 12**.

12.3 ALLUVIUM

A dry to moist alluvial horizon was found to cover the stream crossing sites with a thickness up to ±2m. This layer was typically described as dark black, intact sandy clay or fine sand with a soft/loose consistency. This is in line with the DCP results. Small grassroots were present in this layer.

12.4 MOTTLED

Mottling of Grey and brownish layer was encountered in both test pit, which is often found together in mottled horizons indicate that the soil is not well drained and does suffer from prolonged saturation. This is a layer with high moisture and seepage. Soil mottling is a contrasting or "blotchy" colour pattern within the dominant soil colour. It is formed when the seasonal

highwater table rises into aerobic soils, changing the conditions in the soils from aerobic (oxygen rich) to anoxic (without oxygen). Note: No sidewall collapse was observed in the upper layer of all test pits. No refusal encountered in all test pit.

12.5 COMPLETELY WEATHERED ROCK

All rock material has been disintegrated or decomposed to a soil. However, the original rock structure is still intact. The hydraulic conductivity will be highly variable and flow of water will mainly occur along preferential pathways such as highly leached preferential weathering zones or disintegrated quartz veins. The field hydraulic conductivity is a function of inter alia climate and rock type.

No refusal was encountered in all excavated test pit; this is in line with the DCP results and excavation profile. Note: No sidewall collapse was observed in the upper layer of all test pits.

Samples were taken for laboratory testing. The results will be discussed in **Section 13**. Groundwater seepage was not encountered in all test pit however excessive moist ground was encountered. With mottled layer and ground water seeping found in at Test pits it is advisable that the design engineer to take precautions during the construction phase where excavation will be taking place. Test pits were excavated to reach the predetermined depth below the NGL depending on the ease of excavation by TLB excavation.

Table 3: Summary of test pit profiles.

| TP No. | Transported (m) | | | Excavation Depth (m) | Refusal (Y/N) | Water Seepage (m) | Side Walls Stable (Y/N) |
|--------|-----------------|-----------|--------------|----------------------|---------------|-------------------|-------------------------|
| | Sandy clay | Loam clay | Mottled clay | | | | |
| TP01 | 0.0-0.1 | | 0.1-2.1 | 2.1 | N | N | Y |
| TP02 | | 0.0-0.6 | 0.6-1.6 | 1.6 | N | N | Y |
| TP03 | 0.0-0.8 | | 0.8-1.6 | 1.6 | N | N | Y |
| TP04 | 0.0-0.6 | | 0.6-1.6 | 1.6 | N | N | Y |

13. LABORATORY TESTING RESULTS

A total of 4No soil samples were taken from test pit's TP01-04. The detailed test results are included in **Appendix C** and summarized in **Table 4**.

The laboratory test results are in line with the site observations in that the site is underlain by completely weathered material in the form of mottle clay, loam and sand. The clay soil is generally present in high quantities, it is believed that the material will be expansive due to the high percentage of clay soil present in the area. The test results indicate that both the transported and the residual soils are classified as G9 materials as per *COLTO classification (1998)/COTO 2020*. Therefore, both transported and residual soils are not-suitable to be used in engineering layer works, the expansiveness of the soil will be concern for this site. However, additional testing should be conducted during the construction phase to verify the expansiveness of the material. The final decision solely lies with the design engineer.

Table 4: Summary of Laboratory test results.

| TP No. | Depth (m) | Description | Coarse Material (%) | Fines (passing at 0.075mm sieve) | LL | PI | LS (%) | Grading Modulus | MDD (kg/m³)/OMC | CBR at % Mod AASHTO density | | | | | | Classification COLTO(1998) |
|--------------|-----------|--------------------|---------------------|----------------------------------|----|----|--------|-----------------|-----------------|-----------------------------|----|----|----|----|----|----------------------------|
| | | | | | | | | | | 100 | 98 | 97 | 95 | 93 | 90 | |
| TP 01 | 1.0-2.1 | Black/Yellow Clay | 6 | 21 | 30 | 12 | 6 | 1.71 | 1756/15.7 | 10 | 9 | 9 | 9 | 8 | 6 | G9 |
| TP 02 | 0.0-0.6 | Black clay | 5 | 21 | 38 | 14 | 7 | 1.71 | 1658/16.7 | 16 | 14 | 13 | 11 | 5 | 6 | G9 |
| TP 03 | 0.0-0.8 | Dark brown clay | 4 | 21 | 38 | 16 | 8 | 1.70 | 1704/16.5 | 18 | 16 | 14 | 10 | 8 | 4 | G9 |
| TP 04 | 0.6-1.6 | Light brown/Orange | 1 | 29 | 50 | 22 | 10.8 | 1.40 | 1722/12.8 | 18 | 15 | 14 | 11 | 8 | | G9 |

TP-Test pit **LL**-Liquid Limit **PL**-Plastic Limit **LS**-Linear Shrinkage **GM**-Grading Modulus **OMC**-Optimum Moisture Content **MDD**-Maximum Dry Density

As previously mentioned 4No disturbed samples were taken from transported and residual soils for laboratory testing. The laboratory test results indicate that the site is underlain by soils mainly mottled clay, clay and silt material out of 4 Test pit excavated by TLB. The tests show that majority of the site consist of poor material of high plasticity, denoted as G9 in terms of the *COLTO/COTO* classification. The material exhibits high potential of expansiveness according to *van der Merwe (1964)*.

The PI values for the tested material is generally (Class V) plasticity for granular material of 12-22 % this value of PI indicates that there is medium/highly plasticity, which prove that the soil is high expansive since ethe PI is more that 15%, the transported and residual soils recorded a “High” expansiveness rating according to *Van Der Merwe (1964)*.

Precautionary measures must be taken during the construction phase. The results also show that the material has shrink between 6-10.8 % which also indicate that this is (Class III) which indicate that the material is not good material.

Liquid Limit of 30-50% and a high liquid limit normally indicates a high compressibility and a high swelling potential of material. Therefore, problems associated with heaving soils are anticipated to occur on the area of development where test pits where excavated.

The test results indicate that both the transported and the residual soils were classified as poor for construction, G9 material as per *COLTO classification (1998)*. Therefore, all TP No 01 and 04 indicate that transported and residual soils are not-suitable to be used in engineering layers works. However, the decision solely lies with the design engineer for the site.

Two samples were retrieved on site for Foundation indicator; CBR and Mod testing to determine suitability of the material for construction of building foundation. The samples were classified in accordance with TRH14 guidelines/COLTO as per **Table 4**.

Table 5:Layer works

| Layer | Layer works | Compaction |
|-----------|-------------|---|
| Sub-base | G5/G6 | 95% Mod AASHTO |
| Sub Grade | G7 | 93 Mod AASHTO |
| Sub Grade | G8-G10 | Rip and re compact in-situ material to 93% Mod AASHTO |

14. GEOTECHNICAL ASSESSMENT AND RECOMMENDATIONS

14.1 DYNAMIC CONE PENETROMETER (DCP) TESTS

A total of 4 No DCP tests were conducted across the site next to the TP, next to the test pits. The DCP tests were determined and conducted by Blackrock (Pty) Ltd. The test results are in line with the test pits, the consistency of the materials decrease with increasing depth. The detailed DCP profiles are included in **Appendix B**.

14.2 EARTHWORKS

Based on COLTO Sub clause 3303 (1998), transported soils and weakly sandy clay loam may be classified as 'soft' excavation. The alluvial and sandy materials on the site may be classified as 'soft' excavation to a depth of at least 2.6m.

14.2.1 CLASSES OF EXCAVATION SABS 1200

14.2.1.1 SOFT EXCAVATIONS

soft excavation, other than in restricted excavation, shall be excavation in material that can be efficiently removed or loaded, without prior ripping, by any of the following plant: Front end, Bulldozer and Tractor scraper.

soft excavation, in case of restricted excavation, soft excavation shall be excavation in material that can be efficiently removed by a back-acting excavator of flywheel power approximately 0,10 kW per millimetre of tined-bucket width, without the use of pneumatic tools such as paving breakers

14.3 PROBLEMATIC SOILS

As per Sasolburg Zamdela Gortin Phase1, Additionally, issues with heaving, compressibility soils are anticipated for this location. Pin-holed, matric supported and slickenside soil structures were observed in the transported and residual layers. The slickenside and micro-shattered soils usually indicate that the soil is potentially expansive and generally undergo volumetric changes with moisture changes. It is expected that during the ingress of water if the material is subjected to an increase in net-soil pressure from its current state. Therefore, an improvement in the form of compaction is necessary. A highly to completely weathered very soft rock Andesite ranging from 0 to 2.6 meters was observed on the excavated test pits.

14.4 COMPRESSIBLE SOILS

Compressible soils are soils in which the bulk volume of the soil may gradually decrease with time when subjected to an applied load. These soils typically comprise fine-grained soils such as clay, clayey sand and clayey silt with high plasticity. It is anticipated on this site, due to that the site is generally underlain by mottle clay layer, loam and silt. The laboratory results indicate that the samples comprise mottled clay, loam and sand content with medium to high plasticity. Therefore, problems associated with compressible soils are anticipated to occur on the site, due to that material associated with compression like alluvium/Clay was encountered on site on high quantity.

Table 6: Summary of underlying material.

| | Site Name | Depth (m) | Disturbed Sample tested Description | Undelaying Material |
|-------|----------------------------------|----------------------|--|----------------------------|
| TP 01 | Sasolburg Zamdela Gorrin Phase 1 | 0-1.0 1.0-2.1(HP) | Sandy clay Mottle clay | Mottle clay, loam and sand |
| TP 02 | Sasolburg Zamdela Gorrin Phase 1 | 0-0.6(HP) 0.6-1.6 | Sandy clay Mottle clay | Mottle clay, loam and sand |
| TP 03 | Sasolburg Zamdela Gorrin Phase 1 | 0-0.8(HP) 0.8-1.6 | Sandy clay Mottle clay | Mottle clay, loam and sand |
| TP 04 | Sasolburg Zamdela Gorrin Phase 1 | 0-0.6 0.6-1.6(HP) | Sandy clay Mottle clay | Mottle clay, loam and sand |

14.5 EXPANSIVE SOILS

Active/expansive soils are defined as fine grained soils (generally with high clay content) that change in volume in response to the change in moisture content. These soils may increase in volume (heave/swell) upon wetting and decrease in volume (shrink) upon drying out. The site is mainly underlain by completely weathered mottled clay, loam and sandy, the laboratory results of all the samples analysed indicate medium to high plasticity. Therefore, problems associated with expansiveness of soils is anticipated to occur on site.

14.6 GROUND WATER

Groundwater may negatively affect structures founded on cohesive soil. Furthermore, a shallow/perched groundwater table normally presents a problem of rising damp on structures. Therefore, appropriate remedial measures such as damp proofing needs to be incorporated in the construction of structures in area since a shallow/perched water table is anticipated due to the presence of the mottled clay as it usually indicates the presence of a fluctuating or seasonal water table. Precautionary measures **must** be in place during the design, construction and post construction phases to deal with any unwanted water whether from surface run-off or groundwater. Various Paedogenic soils (signs of ferruginisation /calcification) may indicate fluctuating or seasonally perched water table commonly caused by retarded vertical infiltration and percolation rates. however, groundwater seepage was not encountered during the field investigation, but very moist ground was encountered on site.

14.7 STABILITY OF SLOPES

The planned excavations are not expected to progress more than 1.5m below NGL. Therefore, care should be taken to batter the slopes to create a safe working environment for all people and plant –slopes of 1.1% or shallower should be considered with de-watering measures in place. All slopes should be inspected and approved by a competent geo-professional (engineering geologist or geotechnical engineer).



Figure 10:Sasolburg Zamdela Gortin Phase1 area slope.

14.8 AGGRESSIVENESS OF SOIL

Results of the investigation Samples of in situ soils samples were collected for soil chemistry tests (pH & Conductivity) in order to determine the aggressiveness of the soil which can affect buried services and concrete foundations. A summarised of the results of the pH and conductivity tests is explained below.

Table 7: Influence PH and Conductivity.

| PH | Conductivity (S/m) | Potential Corrosiveness |
|--------------|--------------------|-------------------------|
| 7-8 | <0.1 | Non-corrosive |
| 5-6 or 9-10 | 0.1 – 0.5 | Mild corrosive |
| 3-4 or 11-12 | 0.5 – 1.0 | Corrosive |
| <3 or >12 | >1.0 | Highly corrosive |

The soil sample tested indicates a pH value of 9.88-10.01, which is acidic. According to *CSIR (1997)*, the tested electrical conductivity of 0.122-0.561 S/m indicates a “Corrosive” rating. The concrete cover must be designed to ensure adequate protection for the reinforcing bars against corrosion. **Table 7** below summaries *SANS 1200-G (1982)*, which specifies the minimum concrete cover that is required for various exposure conditions. It is recommended that “Moderate” conditions be adopted for this site.

Table 8: SANS 1200-G specification for minimum concrete cover required.

| Exposure Conditions | Specified strength of concrete (MPa) | | | | | Minimum cover for various exposure conditions (mm) |
|---------------------|--------------------------------------|----|----|----|----|--|
| | 20 | 25 | 30 | 40 | 50 | |
| Mild | 20 | 20 | 15 | 15 | 15 | |
| Moderate | 40 | 40 | 30 | 25 | 20 | |
| Severe | N/A | 50 | 40 | 40 | 35 | |
| Very Severe | N/A | 75 | 60 | 60 | 50 | |

15. SITE CLASS DESIGNATION

The site area is underlain by poor material which consist of mottle clay, loam and silt with low bearing capacity based on the CBR of the TP Tested. The test results indicate that the soil is **un-suitable** to be used in engineered layer works. Settlement 5-15mm are predicted for the development under a 50 kPa loading. The investigation findings indicate that soils comprising of mottle, clay and silt, with potential expansiveness and due to medium to high plasticity of material underlying the site.

The geotechnical classification of the entire site in accordance with *SANS 10400-H (2012)* is: Site class designation: **2H1**

Table 9: Soil Site Classification (NHBRC Building Manual)

Table 9 below gives the basis of the soil site classification that was applied during the investigation and table 9 gives the geotechnical classification for urban development.

| Geotechnical category and site class designation | Geotechnical characteristics |
|--|--|
| Active soils (heave/shrink) - (H) H H1 H2 H3 | Expected range of total movement at surface: < 5 mm 5 – 15 mm 15 – 30 mm > 30mm |
| Compressible soils (S) S S1 S2 | Expected range of total movement at surface: < 5 mm 5 – 15 mm > 15 mm |
| Collapsible Soils (C) C C1 C2 | Expected range of total movement at surface: < 5 mm 5 – 10 mm > 10 mm |
| Excavation – (R) r1 r2 r3 | sub outcrop scattered outcrop and sub-outcrop outcrop, scattered outcrop and sub-outcrop |
| P – Problem soils | Dolomitic Areas, marshy areas, contaminated abandoned borrow areas, land fill, mining subsi and mine waste fill, shallow undermined areas, exploration pits. |
| Inundation and seepage – (W) | Wet area, drainage line, seepage zone |

Table 10 Geotechnical Classification for Urban Development (GFSH-2 Document)

| Geotechnical Sub-Area | Definitions |
|-----------------------|---|
| 1 | Areas recommended or favourable for development |
| 2 | Areas where development can be considered with certain precautionary measures |
| 3 | Areas that are not recommended for development |

16. FOUNDATION RECOMMENDATIONS AND SOLUTIONS.

• OPTION 1: SOIL RAFT

Remove all or necessary parts of the suspected expansive horizon to 1.5m deep as well as 1.0m beyond the perimeter of the building and replace it with inert backfill of G6 or better quality, compacted in 150mm lifts to 93% Mod AASHTO density at 0 to +2% of its optimum moisture content.

Normal construction with lightly reinforced strip footings and light reinforcement in masonry if residual movements are < 7,5 mm, or construction type is appropriate to residual movements.

Site drainage, plumbing and service precautions.

- OPTION 2: STIFFENED OR CELLULAR RAFT

Stiffened or cellular raft of articulated lightly reinforced masonry.

Site drainage and plumbing and service precautions.

- OPTION 3: PILED CONSTRUCTION

Piled foundations with suspended floor slabs with or without ground beams.

Site drainage and plumbing and service precautions.

- OPTION 4: STRIP FOOTING

The width of the strip footings must be at least 600 mm in the case of a foundation to a loadbearing or free-standing masonry wall or to a timber framed wall supporting a roof. Where any strip foundation is laid at more than one level, the higher portion of the foundation shall extend over the lower portion for a distance at least equal to the thickness of the foundation. All unsuitable material should be removed up to depths with favourable founding conditions. The removal should be up to 1m of building perimeter.

17. FOUNDATIONS RECOMMENDED

Option 1 (**RAFT FOOTING**)

is recommended for the site's presence of problematic soils and andesite within the transported, mottled and residual Alluvium soils. Considerable effort must be made to ensure the removal of all andesite underneath the structure's footprint. The recommendation is generalized for the site mentioned above. As always, it is good construction practice to ensure that the base of all foundation excavations is cleaned out properly of all loose and soft material and inspected by a competent person before any foundation construction. The decision solely lies with design engineer to make final adjustment to the foundation recommendations. The footings may be designed to accommodate an allowable bearing capacity of 50 kPa, in all sites.

18. KEY OBSERVATIONS AND CONCLUSION

Based on the assessment conclusion is summarized.

The following key observations were made:

- The transported soils generally have a soil great consistency which provides satisfactory bearing capacity. Soil improvement in a form of compaction is necessary to improve the bearing capacity during the construction phase.
- Soft excavations are expected on transported soils and weakly clay loamy or poorly developed clay. Intermediate to hard excavation should be expected on the well clay pan. Test pit profiles should be used for guidance.
- A pinhole and honeycombed soil structures were observed. These structures are generally indicative of a soil collapse potential. Therefore, soil improvement in a form of compaction is necessary to improve the ground.
- Groundwater was encountered in all test pit, this is concern especially considering that the investigation was conducted in a “dry” season. Therefore, precautionary measures should be in place to deal with expected ground and surface water on site.
- The soils underlying the site are generally poor-quality material ranging G9. Therefore, none of the material should be considered to be used in layer works.

Based on the above, it is, therefore priority that the building design must address the following concerns:

- The investigation find that the soils encountered on the sites exhibit medium to high potential expansiveness with medium to high plasticity. The investigation findings further suggest that the site is underlain by soil material classifying as G9 according to TRH14 guidelines & COLTO/COTO which cannot be considered for construction.
- Improvement is recommended on the subgrade (foundation) to create a stable base on which the pavement layer works can be constructed.

19. REFERENCES

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20. LIMITATIONS

The findings contained in this report are the result of limited discrete investigations conducted in accordance with normal practices and standards. To the best of our knowledge, they represent a reasonable interpretation of the general condition of the site.

For and on behalf of **Blackrocklab (Pty) Ltd**:

| Date | Prepared By | Reviewed By | Approved for Issue By |
|-----------------|---|---|--------------------------|
| 29 January 2024 | T Ramabulana | H.M Nemafohoni | M Mokhobo |
| Details: | N.Dip Civil; BTech Civil PGDip Project Man; ISO 17025 | N.Dip Civil | N.Dip Civil; BTech Civil |
| | Material Engineer | Material Engineer | Pr Tech |
| | 082 498 8085 | 060 981 1503 | 073 552 8207 |
| Signature |  |  | M Mokhobo |

APPENDIX A: TEST PIT PROFILES AND PHOTOGRAPHS



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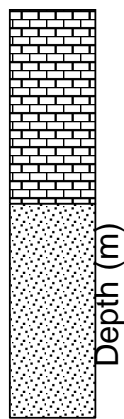
Test Pit : 1

Site Coordinates: 26° 52'27.04"S 27°51'57.24"E

Date Profiled: 15-01-2024

CLIENT: Leko Consulting Engineers(Pty)Ltd
PROJECT: Construction of toilets at Ssolburg Zamdela, Gortin phase1.

Starting Depth: 0m
End Depth: 2.1 m



0 - 1m Moist to very Moist, light-brown clay.
TRANSPORTED
Note: Fine roots observed

1 - 2.1m Very Moist Mottled blotched Grey, Brown and Orange Clay
TRANSPORTED
Notes: Fine roots observed

NOTES:

Excavation stopped at planned excavation at ±2.1m.
Disturbed sample taken @ 1-2.1m.
No water seepage encountered
Side walls stable

TEST PIT 01

CONTRACTOR MACHINE:

TLB

ICLINATION:

VERTICAL

DRILLED BY:

H.N & T.R

DIAM:

0.5m wide Trench

PROFILED BY:

H.N & T.R

DATE:

15-01-2024

TYPE SET BY:

H.N & T.R

DATE:

15-01-2024

SETUP FILE:

STANDARD SET

TIME:

10:10

TEST PIT 01



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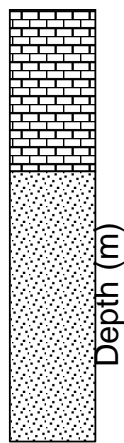
Test Pit : 2

Site Coordinates: 26° 52'6.79"S 27°51'56.43"E

Date Profiled: 15-01-2024

CLIENT: Leko Consulting Engineers(Pty)Ltd
PROJECT: Construction of toilets at Ssolburg Zamdela, Gortin phase1.

Starting Depth: 0m
End Depth: 1.6 m



0 - 0.6m

Dry to slightly moist, light-brown, medium dense, pinholed, and matrix-supported, sandy clay.
TRANSPORTED
Note: Fine roots observed

0.6 - 1.6m

Very Moist Mottled blotched Grey, Brown and Orange Clay
TRANSPORTED
Notes: Fine roots observed

NOTES:

Excavation stopped at planned excavation at ±1.0m.
Disturbed sample taken @0-0.6m.
No water seepage encountered
Side walls stable

TEST PIT 02



CONTRACTOR MACHINE:

TLB

ICLINATION:

VERTICAL

DRILLED BY:

H.N & T.R

DIAM:

0.5m wide Trench

PROFILED BY:

H.N & T.R

DATE:

15-01-2024

TYPE SET BY:

H.N & T.R

DATE:

15-01-2024

SETUP FILE:

STANDARD SET

TIME:

10:51

TEST PIT 02



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BLACKROCKLAB(Pty) Ltd CIVIL ENGINEERING MATERIAL LABORATORY & GEOTECHNICAL SERVICES

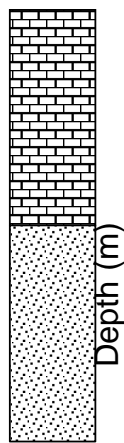
Test Pit : 3

Site Coordinates: 26° 52'22.36"S 27°51'56.03"E

Date Profiled: 15-01-2024

CLIENT: Leko Consulting Engineers(Pty)Ltd
PROJECT: Construction of toilets at Ssolburg Zamdela, Gortin phase1.

Starting Depth: 0m
End Depth: 1.6 m



0 - 0.8m

Dry to slightly moist, dark-brown b, medium dense, pinholed, and matrix-supported, sandy clay.

TRANSPORTED

Note: Fine roots observed

0.8 - 1.6m

Very Moist Mottled blotched Grey, Brown and Orange Clay

TRANSPORTED

Notes: Fine roots observed

NOTES:

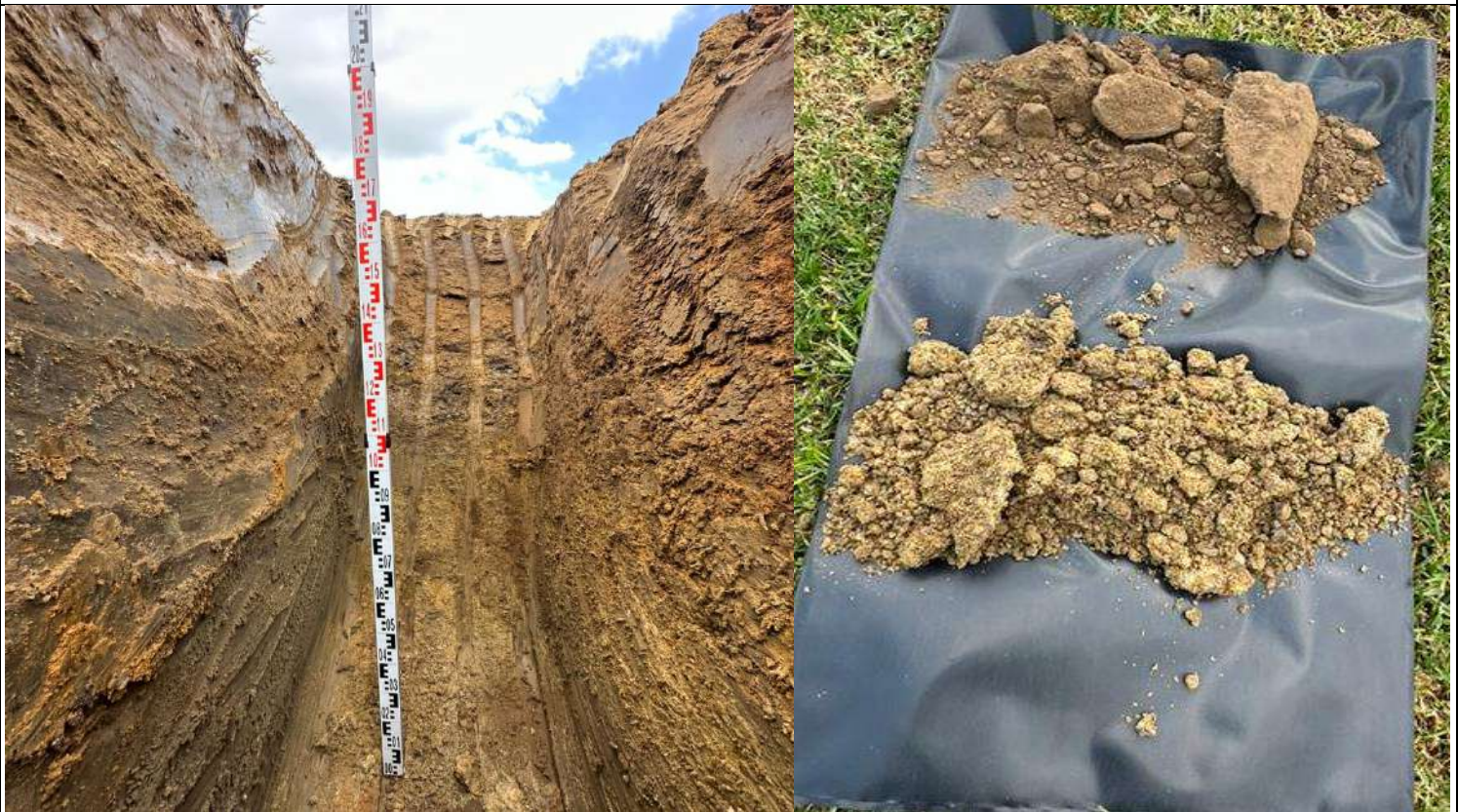
Excavation stopped at planned excavation at ±1.6m.

Disturbed sample taken @0-0.8m.

No water seepage encountered

Side walls stable

TEST PIT 03



CONTRACTOR MACHINE:

DRILLED BY:

PROFILED BY:

TYPE SET BY:

SETUP FILE:

TLB

H.N & T.R

H.N & T.R

H.N & T.R

STANDARD SET

INCLINATION:

DIAM:

DATE:

DATE:

TIME:

VERTICAL

0.5m wide Trench

15-01-2024

15-01-2024

11:35

TEST PIT 03



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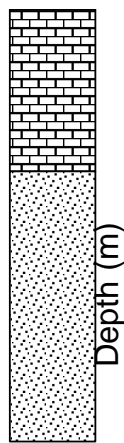
Test Pit : 4

Site Coordinates: 26° 53'11.5"S 27°52'55.74"E

Date Profiled: 15-01-2024

CLIENT: Leko Consulting Engineers(Pty)Ltd
PROJECT: Construction of toilets at Ssolburg Zamdela, Gortin phase1.

Starting Depth: 0m
End Depth: 1.6 m



0 - 0.6m

Dry to slightly moist, light-brown , medium dense, Sandy clay.

TRANSPORTED

Note: Fine roots observed

0.6 - 1.6m

Very Moist Mottled blotched Grey ,Brown and Orange Clay

TRANSPORTED

Notes: Fine roots observed

NOTES:

Excavation stopped at planned excavation at ±1.6m.

Disturbed sample taken @0.6-1.6m.

No water seepage encountered

Side walls stable

TEST PIT 04

CONTRACTOR MACHINE:

TLB

INCLINATION:

DRILLED BY:

H.N & T.R

DIAM:

VERTICAL
0.5m wide Trench

PROFILED BY:

H.N & T.R

DATE:

15-01-2024

TYPE SET BY:

H.N & T.R

DATE:

15-01-2024

SETUP FILE:

STANDARD SET

TIME:

12:20

TEST PIT 04

APPENDIX B: DCP TEST RESULTS



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Date: 15-01-2024

CLIENT: LEKO CONSULTING ENGINEERS (PTY)LTD

TEST REPORT: BIV 2329-01

JOB NUMBER: BIV 2329-01

OPERATOR: Martin & Zamani

DATE TESTED: 15-01-2024

TEST POSITION: DCP 01 [26°52'27.19"S 27°51'57.26"E]

STARTING DEPTH: 0mm

MATERIAL TYPE: Clayey Materials

INSTRUMENT USED: DCP

CONSTRUCTION TYPE: SASOLBURG ZAMDELA ,GORTIN PHASE 1 TOILETS

NOTE: No refusal

| Number of Blows | Depth (mm) | Corrective Depth (mm) | Penetration Tempo | Structure Nr (dn) mm/blow | Consistency | Estimate Bearing Ratio (kPa) | In Situ CBR 410x (dn) ^{-1.27} | In Situ CBR (TMH 6) | In Situ UCS 2900x (dn) ^{-1.09} |
|-----------------|------------|-----------------------|-------------------|---------------------------|-------------|------------------------------|--|---------------------|---|
| 0 | 50 | 0mm | 0 | 0 | | | | | |
| 5 | 155 | 105mm | 105 | 21.0 | Stiff | 122 | 9 | 9 | 105 |
| 10 | 235 | 185mm | 80 | 16.0 | Stiff | 148 | 12 | 12 | 141 |
| 15 | 289 | 239mm | 54 | 10.8 | Very Stiff | 198 | 20 | 21 | 217 |
| 20 | 319 | 269mm | 30 | 6.0 | Very Stiff | 304 | 42 | 44 | 411 |
| 25 | 360 | 310mm | 41 | 8.2 | Very Stiff | 242 | 28 | 30 | 293 |
| 30 | 385 | 335mm | 25 | 5.0 | Very Stiff | 347 | 53 | 56 | 502 |
| 35 | 415 | 365mm | 30 | 6.0 | Very Stiff | 304 | 42 | 44 | 411 |
| 40 | 444 | 394mm | 29 | 5.8 | Very Stiff | 311 | 44 | 46 | 427 |
| 45 | 470 | 420mm | 26 | 5.2 | Very Stiff | 337 | 51 | 53 | 481 |
| 50 | 498 | 448mm | 28 | 5.6 | Very Stiff | 319 | 46 | 48 | 443 |
| 55 | 525 | 475mm | 27 | 5.4 | Very Stiff | 328 | 48 | 51 | 461 |
| 60 | 566 | 516mm | 41 | 8.2 | Very Stiff | 242 | 28 | 30 | 293 |
| 65 | 596 | 546mm | 30 | 6.0 | Very Stiff | 304 | 42 | 44 | 411 |
| 70 | 625 | 575mm | 29 | 5.8 | Very Stiff | 311 | 44 | 46 | 427 |
| 75 | 649 | 599mm | 24 | 4.8 | Very Stiff | 357 | 56 | 59 | 525 |
| 80 | 677 | 627mm | 28 | 5.6 | Very Stiff | 319 | 46 | 48 | 443 |
| 85 | 700 | 650mm | 23 | 4.6 | Very Stiff | 369 | 59 | 62 | 550 |
| 90 | 725 | 675mm | 25 | 5.0 | Very Stiff | 347 | 53 | 56 | 502 |
| 95 | 755 | 705mm | 30 | 6.0 | Very Stiff | 304 | 42 | 44 | 411 |
| 100 | 800 | 750mm | 45 | 9.0 | Very Stiff | 226 | 25 | 26 | 264 |
| 105 | 825 | 775mm | 25 | 5.0 | Very Stiff | 347 | 53 | 56 | 502 |
| 110 | 866 | 816mm | 41 | 8.2 | Very Stiff | 242 | 28 | 30 | 293 |
| 115 | 900 | 850mm | 34 | 6.8 | Very Stiff | 277 | 36 | 38 | 359 |
| 120 | 966 | 916mm | 66 | 13.2 | Very Stiff | 171 | 15 | 16 | 174 |
| 125 | 1011 | 961mm | 45 | 9.0 | Very Stiff | 226 | 25 | 26 | 264 |

DCP GRAPHICAL REPRESENTATION

PROJECT: SASOLBURG ZAMDELA ,GORTIN PHASE 1 TOILETS

DATE TESTED: 15-01-2024

CLIENT: LEKO CONSULTING ENGINEERS (PTY)LTD

OPERATOR: Martin & Zamani

TEST POSITION: DCP 01 [26°52'27.19"S 27°51'57.26"E]

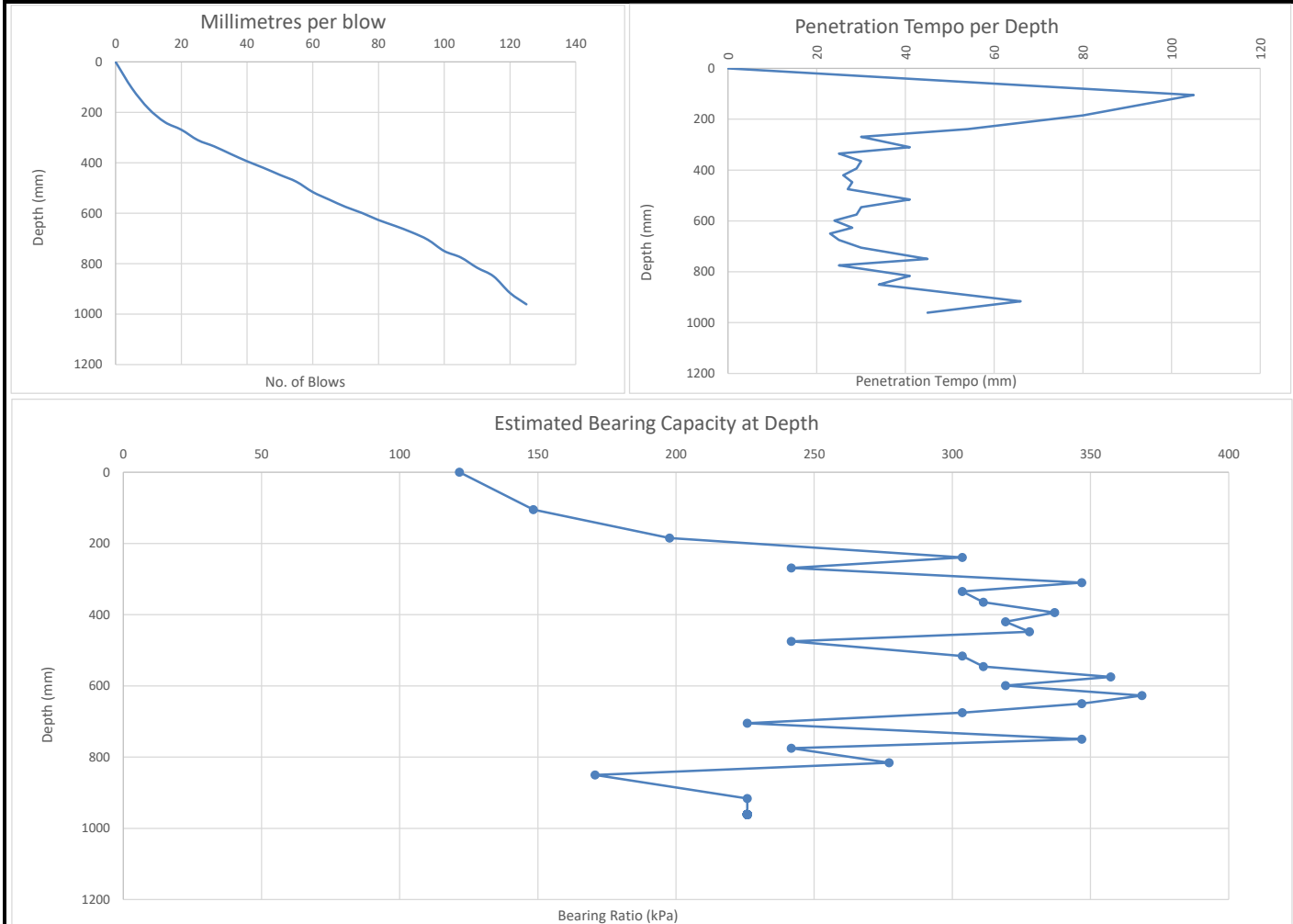
STARTING DEPTH: 0mm

MATERIAL TYPE: Clayey Materials

INSTRUMENT USED: DCP

CONSTRUCTION TYPE: SASOLBURG ZAMDELA ,GORTIN PHASE 1 TOILETS

NOTE: No refusal



Remarks:

1. The results reported relate only to the sample tested, further use of the above information is not the responsibility or liability of Blackrocklab (Pty)Ltd.
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Technical manager/Approved by:

T Ramabulana

Signature:

15-01-2024



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Date: 15-01-2024

CLIENT: LEKO CONSULTING ENGINEERS (PTY)LTD

TEST REPORT: BIV 2329-02

JOB NUMBER: BIV 2329-02

OPERATOR: Martin & Zamani

DATE TESTED: 15-01-2024

TEST POSITION: DCP 02 [26°52'6.71"S 27°51'56.32"E]

STARTING DEPTH: 0mm

MATERIAL TYPE: Clayey Materials

INSTRUMENT USED: DCP

CONSTRUCTION TYPE: SASOLBURG ZAMDELA ,GORTIN PHASE 1 TOILETS

NOTE: No refusal

| Number of Blows | Depth (mm) | Corrective Depth (mm) | Penetration Tempo | Structure Nr (dn) mm/blow | Consistency | Estimate Bearing Ratio (kPa) | In Situ CBR 410x (dn) ^{-1.27} | In Situ CBR (TMH 6) | In Situ UCS 2900x (dn) ^{-1.09} |
|-----------------|------------|-----------------------|-------------------|---------------------------|-------------|------------------------------|--|---------------------|---|
| 0 | 45 | 0mm | 0 | 0 | | | | | |
| 5 | 161 | 116mm | 116 | 23.2 | Stiff | 113 | 8 | 8 | 94 |
| 10 | 265 | 220mm | 104 | 20.8 | Stiff | 123 | 9 | 9 | 106 |
| 15 | 355 | 310mm | 90 | 18.0 | Stiff | 136 | 10 | 11 | 124 |
| 20 | 455 | 410mm | 100 | 20.0 | Stiff | 126 | 9 | 9 | 111 |
| 25 | 481 | 436mm | 26 | 5.2 | Very Stiff | 337 | 51 | 53 | 481 |
| 30 | 516 | 471mm | 35 | 7.0 | Very Stiff | 271 | 35 | 36 | 348 |
| 35 | 561 | 516mm | 45 | 9.0 | Very Stiff | 226 | 25 | 26 | 264 |
| 40 | 586 | 541mm | 25 | 5.0 | Very Stiff | 347 | 53 | 56 | 502 |
| 45 | 615 | 570mm | 29 | 5.8 | Very Stiff | 311 | 44 | 46 | 427 |
| 50 | 668 | 623mm | 53 | 10.6 | Very Stiff | 200 | 20 | 21 | 221 |
| 55 | 702 | 657mm | 34 | 6.8 | Very Stiff | 277 | 36 | 38 | 359 |
| 60 | 733 | 688mm | 31 | 6.2 | Very Stiff | 296 | 40 | 42 | 397 |
| 65 | 766 | 721mm | 33 | 6.6 | Very Stiff | 283 | 37 | 39 | 371 |
| 70 | 795 | 750mm | 29 | 5.8 | Very Stiff | 311 | 44 | 46 | 427 |
| 75 | 825 | 780mm | 30 | 6.0 | Very Stiff | 304 | 42 | 44 | 411 |
| 80 | 851 | 806mm | 26 | 5.2 | Very Stiff | 337 | 51 | 53 | 481 |
| 85 | 878 | 833mm | 27 | 5.4 | Very Stiff | 328 | 48 | 51 | 461 |
| 90 | 900 | 855mm | 22 | 4.4 | Very Stiff | 381 | 62 | 66 | 577 |
| 95 | 922 | 877mm | 22 | 4.4 | Very Stiff | 381 | 62 | 66 | 577 |
| 100 | 944 | 899mm | 22 | 4.4 | Very Stiff | 381 | 62 | 66 | 577 |
| 105 | 971 | 926mm | 27 | 5.4 | Very Stiff | 328 | 48 | 51 | 461 |
| 110 | 999 | 954mm | 28 | 5.6 | Very Stiff | 319 | 46 | 48 | 443 |
| 115 | 1025 | 980mm | 26 | 5.2 | Very Stiff | 337 | 51 | 53 | 481 |

DCP GRAPHICAL REPRESENTATION

PROJECT: SASOLBURG ZAMDELA ,GORTIN PHASE 1 TOILETS

DATE TESTED: 15-01-2024

CLIENT: LEKO CONSULTING ENGINEERS (PTY)LTD

OPERATOR: Martin & Zamani

TEST POSITION: DCP 02 [26°52'6.71"S 27°51'56.32"E]

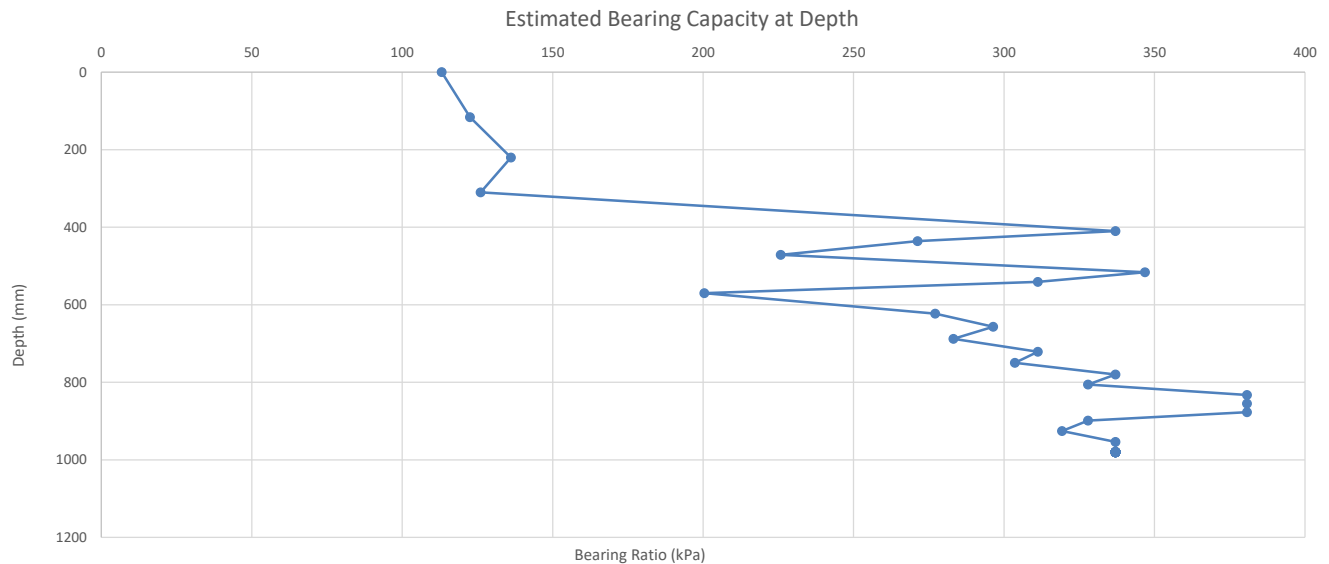
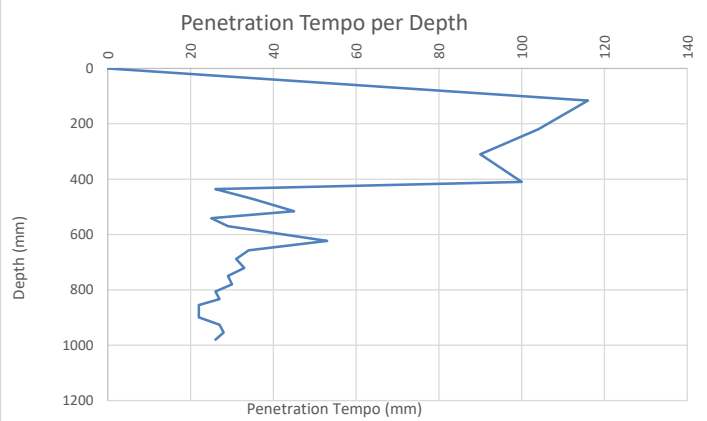
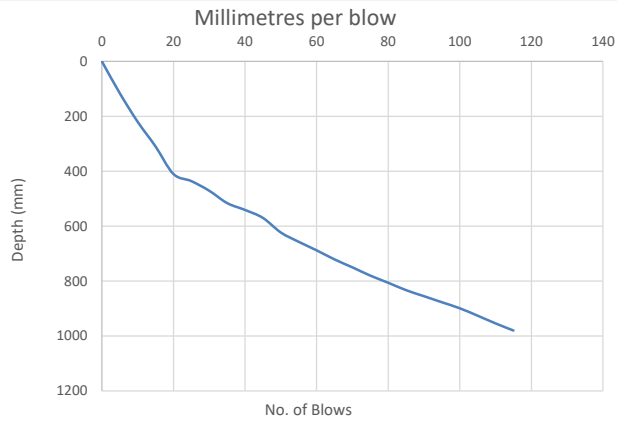
STARTING DEPTH: 0mm

MATERIAL TYPE: Clayey Materials

INSTRUMENT USED: DCP

CONSTRUCTION TYPE: SASOLBURG ZAMDELA ,GORTIN PHASE 1 TOILETS

NOTE: No refusal



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Date: 15-01-2024

CLIENT: LEKO CONSULTING ENGINEERS (PTY)LTD

TEST REPORT: BIV 2329-03

JOB NUMBER: BIV 2329-03

OPERATOR: Martin & Zamani

DATE TESTED: 15-01-2024

TEST POSITION: DCP 03 [26°52'22.36"S 27°51'56.18"E]

STARTING DEPTH: 0mm

MATERIAL TYPE: Clayey Materials

INSTRUMENT USED: DCP

CONSTRUCTION TYPE: SASOLBURG ZAMDELA ,GORTIN PHASE 1 TOILETS

NOTE: No refusal

| Number of Blows | Depth (mm) | Corrective Depth (mm) | Penetration Tempo | Structure Nr (dn) mm/blow | Consistency | Estimate Bearing Ratio (kPa) | In Situ CBR 410x (dn) ^{-1.27} | In Situ CBR (TMH 6) | In Situ UCS 2900x (dn) ^{-1.09} |
|-----------------|------------|-----------------------|-------------------|---------------------------|-------------|------------------------------|--|---------------------|---|
| 0 | 40 | 0mm | 0 | 0 | | | | | |
| 5 | 149 | 109mm | 109 | 21.8 | Stiff | 118 | 8 | 8 | 101 |
| 10 | 244 | 204mm | 95 | 19.0 | Stiff | 131 | 10 | 10 | 117 |
| 15 | 331 | 291mm | 87 | 17.4 | Stiff | 140 | 11 | 11 | 129 |
| 20 | 412 | 372mm | 81 | 16.2 | Stiff | 147 | 12 | 12 | 139 |
| 25 | 499 | 459mm | 87 | 17.4 | Stiff | 140 | 11 | 11 | 129 |
| 30 | 553 | 513mm | 54 | 10.8 | Very Stiff | 198 | 20 | 21 | 217 |
| 35 | 625 | 585mm | 72 | 14.4 | Very Stiff | 160 | 14 | 14 | 158 |
| 40 | 668 | 628mm | 43 | 8.6 | Very Stiff | 233 | 27 | 28 | 278 |
| 45 | 702 | 662mm | 34 | 6.8 | Very Stiff | 277 | 36 | 38 | 359 |
| 50 | 725 | 685mm | 23 | 4.6 | Very Stiff | 369 | 59 | 62 | 550 |
| 55 | 746 | 706mm | 21 | 4.2 | Very Stiff | 394 | 66 | 70 | 607 |
| 60 | 768 | 728mm | 22 | 4.4 | Very Stiff | 381 | 62 | 66 | 577 |
| 65 | 789 | 749mm | 21 | 4.2 | Very Stiff | 394 | 66 | 70 | 607 |
| 70 | 810 | 770mm | 21 | 4.2 | Very Stiff | 394 | 66 | 70 | 607 |
| 75 | 835 | 795mm | 25 | 5.0 | Very Stiff | 347 | 53 | 56 | 502 |
| 80 | 860 | 820mm | 25 | 5.0 | Very Stiff | 347 | 53 | 56 | 502 |
| 85 | 886 | 846mm | 26 | 5.2 | Very Stiff | 337 | 51 | 53 | 481 |
| 90 | 915 | 875mm | 29 | 5.8 | Very Stiff | 311 | 44 | 46 | 427 |
| 95 | 944 | 904mm | 29 | 5.8 | Very Stiff | 311 | 44 | 46 | 427 |
| 100 | 970 | 930mm | 26 | 5.2 | Very Stiff | 337 | 51 | 53 | 481 |
| 105 | 1005 | 965mm | 35 | 7.0 | Very Stiff | 271 | 35 | 36 | 348 |

DCP GRAPHICAL REPRESENTATION

PROJECT: SASOLBURG ZAMDELA ,GORTIN PHASE 1 TOILETS

DATE TESTED: 15-01-2024

CLIENT: LEKO CONSULTING ENGINEERS (PTY)LTD

OPERATOR: Martin & Zamani

TEST POSITION: DCP 03 [26°52'22.36"S 27°51'56.18"E]

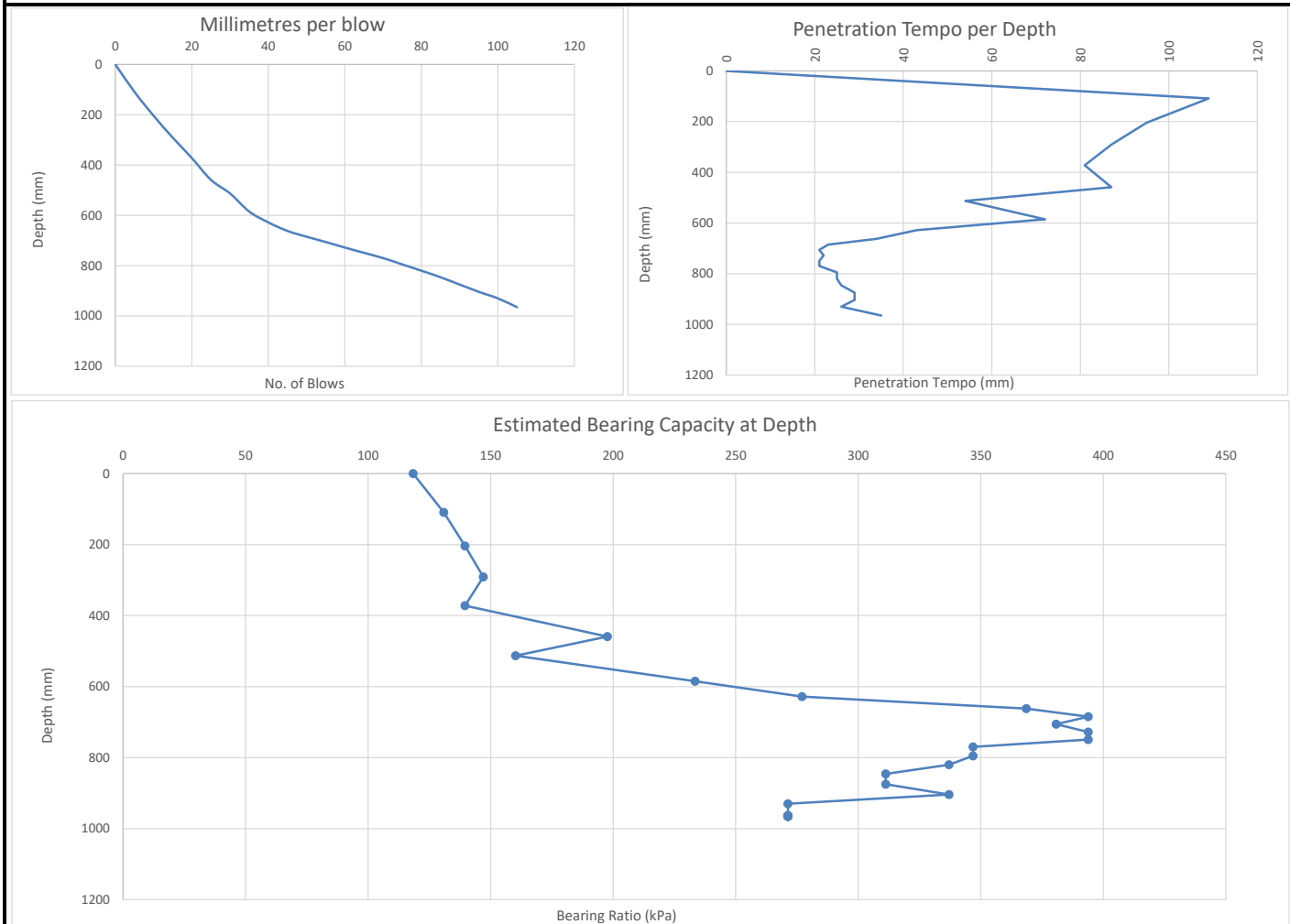
STARTING DEPTH: 0mm

MATERIAL TYPE: Clayey Materials

INSTRUMENT USED: DCP

CONSTRUCTION TYPE: SASOLBURG ZAMDELA ,GORTIN PHASE 1 TOILETS

NOTE: No refusal



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Technical manager/Approved by:

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Signature:

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Date: 15-01-2024

CLIENT: LEKO CONSULTING ENGINEERS (PTY)LTD

TEST REPORT: BIV 2329-04

JOB NUMBER: BIV 2329-04

OPERATOR: Martin & Zamani

DATE TESTED: 15-01-2024

TEST POSITION: DCP 04 [26°53'11.53"S 27°52'55.96"E]

STARTING DEPTH: 0mm

MATERIAL TYPE: Clayey Materials

INSTRUMENT USED: DCP

CONSTRUCTION TYPE: SASOLBURG ZAMDELA ,GORTIN PHASE 1 TOILETS

NOTE: No refusal

| Number of Blows | Depth (mm) | Corrective Depth (mm) | Penetration Tempo | Structure Nr (dn) mm/blow | Consistency | Estimate Bearing Ratio (kPa) | In Situ CBR 410x (dn) ^{-1.27} | In Situ CBR (TMH 6) | In Situ UCS 2900x (dn) ^{-1.09} |
|-----------------|------------|-----------------------|-------------------|---------------------------|-------------|------------------------------|--|---------------------|---|
| 0 | 30 | 0mm | 0 | 0 | | | | | |
| 5 | 110 | 80mm | 80 | 16.0 | Stiff | 148 | 12 | 12 | 141 |
| 10 | 201 | 171mm | 91 | 18.2 | Stiff | 135 | 10 | 11 | 123 |
| 15 | 314 | 284mm | 113 | 22.6 | Stiff | 115 | 8 | 8 | 97 |
| 20 | 411 | 381mm | 97 | 19.4 | Stiff | 129 | 9 | 10 | 114 |
| 25 | 515 | 485mm | 104 | 20.8 | Stiff | 123 | 9 | 9 | 106 |
| 30 | 633 | 603mm | 118 | 23.6 | Stiff | 112 | 7 | 8 | 92 |
| 35 | 666 | 636mm | 33 | 6.6 | Very Stiff | 283 | 37 | 39 | 371 |
| 40 | 701 | 671mm | 35 | 7.0 | Very Stiff | 271 | 35 | 36 | 348 |
| 45 | 746 | 716mm | 45 | 9.0 | Very Stiff | 226 | 25 | 26 | 264 |
| 50 | 768 | 738mm | 22 | 4.4 | Very Stiff | 381 | 62 | 66 | 577 |
| 55 | 795 | 765mm | 27 | 5.4 | Very Stiff | 328 | 48 | 51 | 461 |
| 60 | 825 | 795mm | 30 | 6.0 | Very Stiff | 304 | 42 | 44 | 411 |
| 65 | 851 | 821mm | 26 | 5.2 | Very Stiff | 337 | 51 | 53 | 481 |
| 70 | 877 | 847mm | 26 | 5.2 | Very Stiff | 337 | 51 | 53 | 481 |
| 75 | 902 | 872mm | 25 | 5.0 | Very Stiff | 347 | 53 | 56 | 502 |
| 80 | 925 | 895mm | 23 | 4.6 | Very Stiff | 369 | 59 | 62 | 550 |
| 85 | 938 | 908mm | 13 | 2.6 | Very Stiff | >400 | 122 | >110 | 1023 |
| 90 | 950 | 920mm | 12 | 2.4 | Very Stiff | >400 | 135 | >110 | 1117 |
| 95 | 960 | 930mm | 10 | 2.0 | Very Stiff | >400 | 170 | >110 | 1362 |
| 100 | 970 | 940mm | 10 | 2.0 | Very Stiff | >400 | 170 | >110 | 1362 |
| 105 | 985 | 955mm | 15 | 3.0 | Very Stiff | >400 | 102 | 108 | 876 |
| 110 | 1002 | 972mm | 17 | 3.4 | Very Stiff | >400 | 87 | 92 | 764 |

DCP GRAPHICAL REPRESENTATION

PROJECT: SASOLBURG ZAMDELA ,GORTIN PHASE 1 TOILETS

DATE TESTED: 15-01-2024

CLIENT: LEKO CONSULTING ENGINEERS (PTY)LTD

OPERATOR: Martin & Zamani

TEST POSITION: DCP 04 [26°53'11.53"S 27°52'55.96"E]

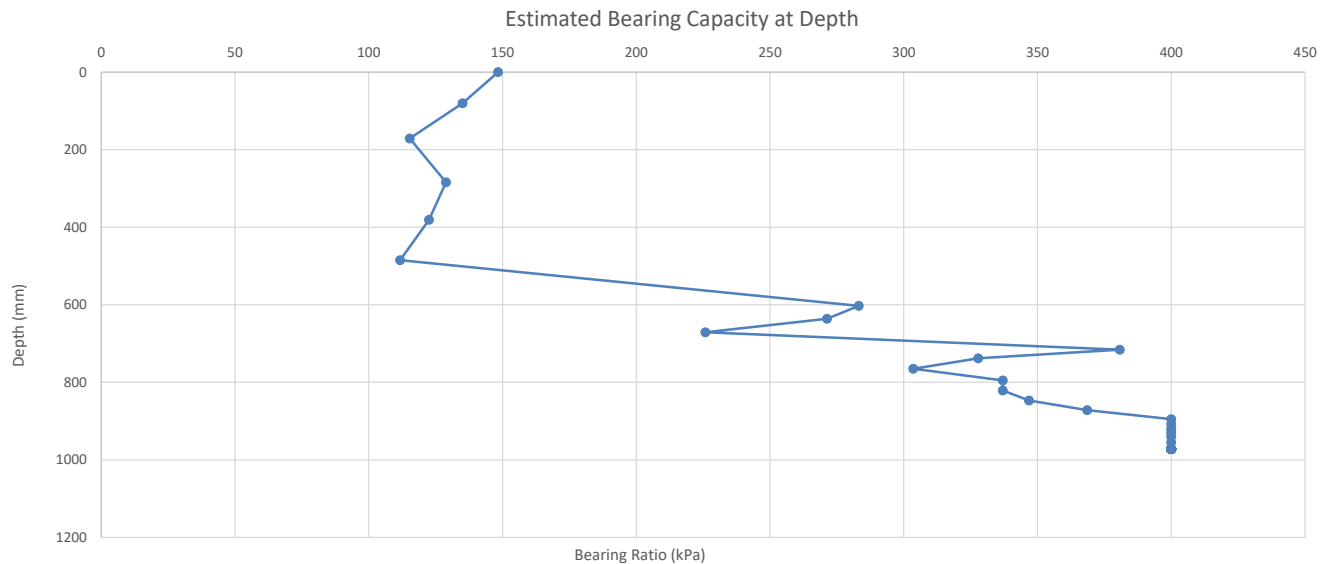
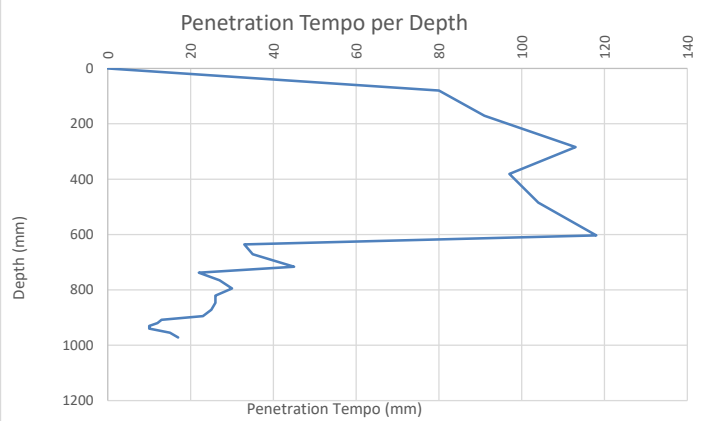
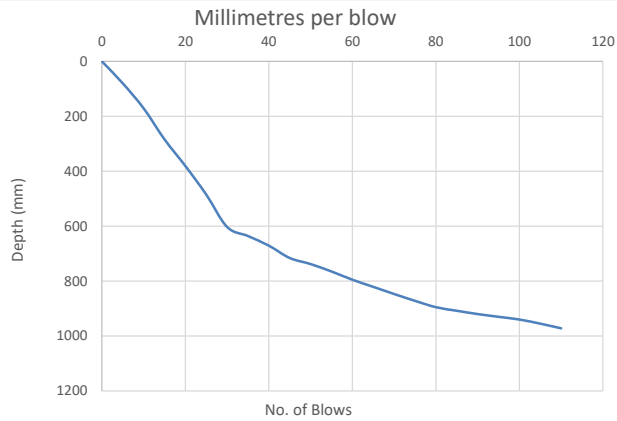
STARTING DEPTH: 0mm

MATERIAL TYPE: Clayey Materials

INSTRUMENT USED: DCP

CONSTRUCTION TYPE: SASOLBURG ZAMDELA ,GORTIN PHASE 1 TOILETS

NOTE: No refusal



Remarks:

1. The results reported relate only to the sample tested, further use of the above information is not the responsibility or liability of Blackrocklab (Pty)Ltd.
2. This document is the correct record of all measurements made, and may not be reproduced other than with full written approval from the Technical Manager of Blackrocklab.

Technical manager/Approved by:

T Ramabulana

Signature:

15-01-2024

APPENDIX C: LABORATORY TEST RESULTS

Sheet 1

LANGA GEOTECHNICAL SERVICES
13 JAN STREET
ROCKY'S DRIFT
WHITERIVER, 1241
Tel: +713 758 1080
Fax: +713 758 1034



T0722



CLIENT : BLACKROCKLAB
ADDRESS :
LOCATION :
TEL :
ATT :

PROJECT : SASOLBURG ZAMDELA GORTIN TOILETS
YOUR REF : SASOLBURG ZAMDELA GORTIN TOILETS
OUR REF : Langa/BRL/24/01
DATE REPORTED : 29/01/2024

SIEVE ANALYSIS, ATTERBERG LIMITS, CBR (SANS 3001 - GR)

Sample no : S215/24/0001
Hole no : TP 01
Depth : (1 - 2,1 m)
Chainage/Section : TP 01
Layer : N/A
Description : BLACK YELLOW (CLAY)
Stabilized with : NEAT

SIEVE ANALYSIS (% PASSING) - SANS 3001 - GR1 OR GR2

| | |
|---------|-----|
| 75.0mm | 100 |
| 63.0mm | 100 |
| 53.0mm | 100 |
| 37.5mm | 100 |
| 27mm | 100 |
| 20.0mm | 100 |
| 14mm | 100 |
| 5mm | 94 |
| 2.00mm | 79 |
| 0.425mm | 30 |
| 0.075mm | 21 |

SOIL MORTAR - SANS 3001 - PR5

| | |
|--------|----|
| Gravel | 6 |
| Sand | 73 |
| Fine | 21 |

CONSTANTS

| | |
|-----------------------------|-------|
| Grading modules | 1.71 |
| PRA classification | A-2-6 |
| Unified soil classification | SC |
| TRH classification | G9 |
| Liquid Limit | 30 |
| Plasticity Index | 12 |
| Linear Shrinkage | 6 |

MOD AND CBR

Test Method for MOD : SANS 3001 - GR30/GR31

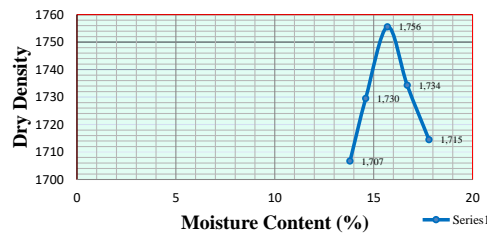
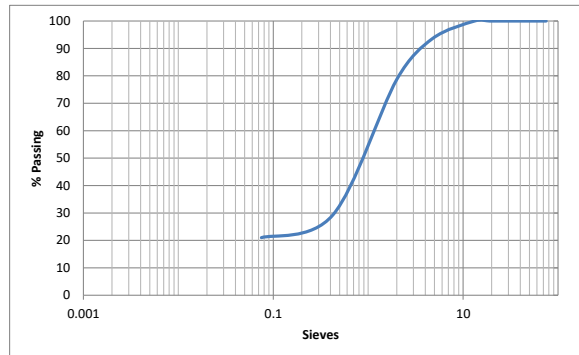
| | |
|-----------------------|------|
| Mod AASHTO | |
| Max DD (Kg/m3) | 1756 |
| OMC (%) | 15.7 |
| Moulding Moisture (%) | 15.7 |

TEST METHOD : SANS 3001 - GR40 CBR

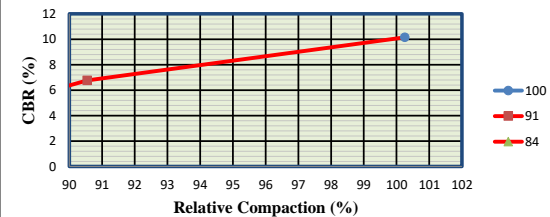
| | |
|----------------------------|----|
| CBR (%) at 100% Mod AASHTO | 10 |
| CBR (%) at 98% Mod AASHTO | 9 |
| CBR (%) at 97% Mod AASHTO | 9 |
| CBR (%) at 95% Mod AASHTO | 8 |
| CBR (%) at 93% Mod AASHTO | 7 |
| CBR (%) at 90% Mod AASHTO | 6 |

| | |
|-------------------------|-----|
| Swell at Mod AASHTO (%) | 0.0 |
| Swell at NRB (%) | 0.1 |
| Swell at Proctor (%) | 0.2 |

SIEVE ANALYSIS GRAPH





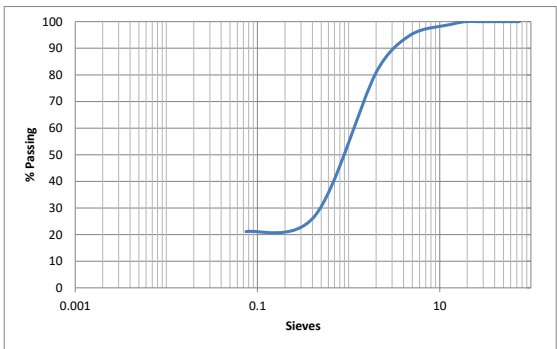
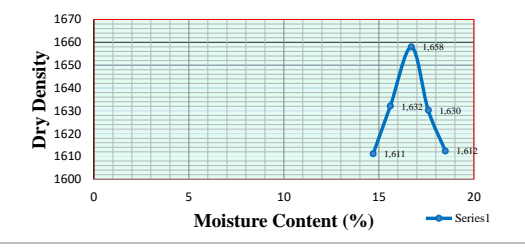
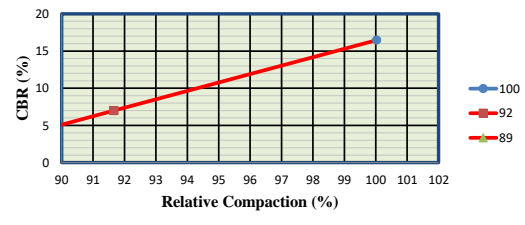

CBR/% COMPACTION





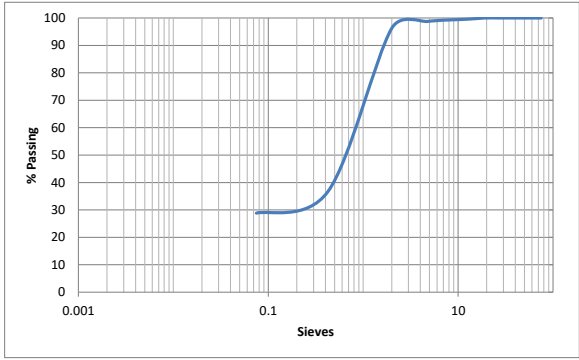
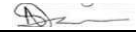
REMARKS: Material sampling and preparation done as per TMH5, methods MB1, MD1 and MD2
on as per client request

NOTE: The test results are only relevant to the sample tested, which was tested in accordance with the relevant SANS 3001 - GR methods.
Any results may only be reproduced in their entirety with the written consent of Langa Geotechnical Services (Pty) Ltd, and any remarks made fall outside the scope of our Accreditation.

Technical Signatory- Name: ND Ncongwane

| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|--|---|--------------------------|------------|-----------------------------|-----|---------------------------|-----|--------------------------|---------|--------------------------|------|---|----|--|--|------------------|-----|----------------------|-----|---------|----|--|--|--------|---|------|----|------|----|------|---|
| Sheet 1 | LANGA GEOTECHNICAL SERVICES 13 JAN STREET ROCKY'S DRIFT WHITERIVER, 1241 Tel: +713 758 1080 Fax: +713 758 1034 |  T0722 |  | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| CLIENT : BLACKROCKLAB ADDRESS : LOCATION : CELL : ATT : | | PROJECT : SASOLBURG ZAMDELA GORTIN TOILETS YOUR REF : SASOLBURG ZAMDELA GORTIN TOILETS OUR REF : LANGA/BRL/24/01 DATE REPORTED : 29/01/2024 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| SIEVE ANALYSIS, ATTERBERG LIMITS, CBR (SANS 3001 - GR) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Sample no : S215/24/0002 Hole no : TP 02 Depth : (0 - 0,6 m) Chainage/Section : TP 02 Layer : N/A Description : BLACK (CLAY) Stabilized with : NEAT | | SIEVE ANALYSIS GRAPH  | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| SIEVE ANALYSIS (% PASSING) - SANS 3001 - GR1 OR GR2 <table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td>75.0mm</td><td>100</td></tr> <tr><td>63.0mm</td><td>100</td></tr> <tr><td>53.0mm</td><td>100</td></tr> <tr><td>37.5mm</td><td>100</td></tr> <tr><td>27mm</td><td>100</td></tr> <tr><td>20.0mm</td><td>100</td></tr> <tr><td>14mm</td><td>99</td></tr> <tr><td>5mm</td><td>95</td></tr> <tr><td>2.00mm</td><td>81</td></tr> <tr><td>0.425mm</td><td>27</td></tr> <tr><td>0.075mm</td><td>21</td></tr> </table> | | 75.0mm | 100 | 63.0mm | 100 | 53.0mm | 100 | 37.5mm | 100 | 27mm | 100 | 20.0mm | 100 | 14mm | 99 | 5mm | 95 | 2.00mm | 81 | 0.425mm | 27 | 0.075mm | 21 | SOIL MORTAR - SANS 3001 - PR5 <table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td>Gravel</td><td>5</td></tr> <tr><td>Sand</td><td>74</td></tr> <tr><td>Silt</td><td>15</td></tr> <tr><td>Clay</td><td>6</td></tr> </table> | | Gravel | 5 | Sand | 74 | Silt | 15 | Clay | 6 |
| 75.0mm | 100 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 63.0mm | 100 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 53.0mm | 100 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 37.5mm | 100 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 27mm | 100 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 20.0mm | 100 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 14mm | 99 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5mm | 95 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2.00mm | 81 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0.425mm | 27 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0.075mm | 21 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Gravel | 5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Sand | 74 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Silt | 15 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Clay | 6 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| CONSTANTS <table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td>Grading modules</td><td>1.71</td></tr> <tr><td>PRA classification</td><td>A6</td></tr> <tr><td>Unified soil classification</td><td>SC</td></tr> <tr><td>TRH classification</td><td>G9</td></tr> <tr><td>Liquid Limit</td><td>38</td></tr> <tr><td>Plasticity Index</td><td>14</td></tr> <tr><td>Linear Shrinkage</td><td>7</td></tr> </table> | | Grading modules | 1.71 | PRA classification | A6 | Unified soil classification | SC | TRH classification | G9 | Liquid Limit | 38 | Plasticity Index | 14 | Linear Shrinkage | 7 |  | | | | | | | | | | | | | | | | | |
| Grading modules | 1.71 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| PRA classification | A6 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Unified soil classification | SC | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| TRH classification | G9 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Liquid Limit | 38 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Plasticity Index | 14 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Linear Shrinkage | 7 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| MOD AND CBR <table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td colspan="2">Test Method for MOD</td><td>SANS 3001 - GR30/GR31</td></tr> <tr><td colspan="2">Mod AASHTO</td><td></td></tr> <tr><td>Max DD (Kg/m3)</td><td></td><td>1658</td></tr> <tr><td>OMC (%)</td><td></td><td>16.7</td></tr> <tr><td>Moulding Moisture (%)</td><td></td><td>16.7</td></tr> </table> | | Test Method for MOD | | SANS 3001 - GR30/GR31 | Mod AASHTO | | | Max DD (Kg/m3) | | 1658 | OMC (%) | | 16.7 | Moulding Moisture (%) | | 16.7 | CBR/% COMPACTION  | | | | | | | | | | | | | | | | |
| Test Method for MOD | | SANS 3001 - GR30/GR31 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Mod AASHTO | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Max DD (Kg/m3) | | 1658 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| OMC (%) | | 16.7 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Moulding Moisture (%) | | 16.7 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| TEST METHOD SANS 3001 - GR40 <table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td>CBR (%) at 100% Mod AASHTO</td><td>16</td></tr> <tr><td>CBR(%) at 98% Mod AASHTO</td><td>14</td></tr> <tr><td>CBR(%) at 97% Mod AASHTO</td><td>13</td></tr> <tr><td>CBR (%) at 95% Mod AASHTO</td><td>11</td></tr> <tr><td>CBR(%) at 93% Mod AASHTO</td><td>8</td></tr> <tr><td>CBR(%) at 90% Mod AASHTO</td><td>5</td></tr> </table> | | CBR (%) at 100% Mod AASHTO | 16 | CBR(%) at 98% Mod AASHTO | 14 | CBR(%) at 97% Mod AASHTO | 13 | CBR (%) at 95% Mod AASHTO | 11 | CBR(%) at 93% Mod AASHTO | 8 | CBR(%) at 90% Mod AASHTO | 5 | <table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td>Swell at Mod AASHTO (%)</td><td>0.0</td></tr> <tr><td>Swell at NRB (%)</td><td>0.1</td></tr> <tr><td>Swell at Proctor (%)</td><td>0.1</td></tr> </table> | | Swell at Mod AASHTO (%) | 0.0 | Swell at NRB (%) | 0.1 | Swell at Proctor (%) | 0.1 | | | | | | | | | | | | |
| CBR (%) at 100% Mod AASHTO | 16 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| CBR(%) at 98% Mod AASHTO | 14 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| CBR(%) at 97% Mod AASHTO | 13 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| CBR (%) at 95% Mod AASHTO | 11 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| CBR(%) at 93% Mod AASHTO | 8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| CBR(%) at 90% Mod AASHTO | 5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Swell at Mod AASHTO (%) | 0.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Swell at NRB (%) | 0.1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Swell at Proctor (%) | 0.1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| REMARKS: Material sampling and preparation done as per TMH5, methods MB1, MD1 and MD2 oned as per client request | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| NOTE: The test results are only relevant to the sample tested, which was tested in accordance with the relevant SANS 3001 - GR methods. Any results may only be reproduced in their entirety with the written consent of Langa Geotechnical Services (Pty) Ltd, and any remarks made fall outside the scope of our Accreditation. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|  Technical Signatory- Name: ND Ncongwane | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

| | | | |
|---|---|--|--|
| Sheet 1 | LANGA GEOTECHNICAL SERVICES 13 JAN STREET ROCKY'S DRIFT WHITERIVER, 1241 Tel: +713 758 1080 Fax: +713 758 1034 | T0722 | |
| CLIENT : BLACKROCKLAB ADDRESS : LOCATION : CELL : ATT : | | PROJECT : SASOLBURG ZAMDELA GORTIN TOILETS YOUR REF : SASOLBURG ZAMDELA GORTIN TOILETS OUR REF : LANGA/BRL/24/01 DATE REPORTED : 29/01/2024 | |
| SIEVE ANALYSIS, ATTERBERG LIMITS, CBR (SANS 3001 - GR) | | | |
| Sample no : S215/24/0003 Hole no : TP 03 Depth : (0 - 0,8 m) Chainage/Section : TP 03 Layer : N/A Description : DARK BROWN (CLAY) Stabilized with : NEAT | | SIEVE ANALYSIS GRAPH | |
| SIEVE ANALYSIS (% PASSING) - SANS 3001 - GR1 OR GR2 | | | |
| 75.0mm 63.0mm 53.0mm 37.5mm 27mm 20.0mm 14mm 5mm 2.00mm 0.425mm 0.075mm | 100 100 100 100 100 100 99 96 82 27 21 | | |
| SOIL MORTAR - SANS 3001 - PR5 | | | |
| Gravel Sand Silt Clay | 4 75 17 4 | | |
| CONSTANTS | | | |
| Grading modules PRA classification Unified soil classification TRH classification Liquid Limit Plasticity Index Linear Shrinkage | 1.70 A6 SC G9 38 16 8 | | |
| MOD AND CBR | | | |
| Test Method for MOD | | SANS 3001 - GR30/GR31 | |
| Mod AASHTO Max DD (Kg/m³) OMC (%) Moulding Moisture (%) | | 1704 16.5 16.5 | |
| TEST METHOD SANS 3001 - GR40 | | CBR | |
| CBR (%) at 100% Mod AASHTO CBR (%) at 98% Mod AASHTO CBR (%) at 97% Mod AASHTO CBR (%) at 95% Mod AASHTO CBR (%) at 93% Mod AASHTO CBR (%) at 90% Mod AASHTO | 18 16 14 10 8 4 | | |
| Swell at Mod AASHTO (%) Swell at NRB (%) Swell at Proctor (%) | 0.0 0.1 0.1 | | |
| REMARKS: Material sampling and preparation done as per TMH5, methods MB1, MD1 and MD2 oned as per client request | | | |
| NOTE: The test results are only relevant to the sample tested, which was tested in accordance with the relevant SANS 3001 - GR methods. Any results may only be reproduced in their entirety with the written consent of Langa Geotechnical Services (Pty) Ltd, and any remarks made fall outside the scope of our Accreditation. | | | |
| Technical Signatory- Name: ND Ncongwane | | | |

| | | | |
|--|--|--|---|
| LANGA GEOTECHNICAL SERVICES 13 JAN STREET ROCKY'S DRIFT WHITERIVER, 1241 Tel: +713 758 1080 Fax: +713 758 1034 | |  T0722 |  |
| CLIENT : BLACKROCKLAB ADDRESS : LOCATION : CELL : ATT : | | PROJECT : SASOLBURG ZAMDELA GORTIN TOILETS YOUR REF : SASOLBURG ZAMDELA GORTIN TOILETS OUR REF : LANGA/BRL/24/01 DATE REPORTED : 29/01/2024 | |
| SIEVE ANALYSIS, ATTERBERG LIMITS, CBR (SANS 3001 - GR) | | | |
| Sample no : S215/24/0004 Hole no : TP 04 Depth : (0.6 - 1,6 m) Chainage/Section : TP 04 Layer : N/A Description : LT BR ORANGE (CLAY) Stabilized with : NEAT | | SIEVE ANALYSIS GRAPH  | |
| SIEVE ANALYSIS (% PASSING) - SANS 3001 - GR1 OR GR2 | | | |
| 75.0mm : 100 63.0mm : 100 53.0mm : 100 37.5mm : 100 27mm : 100 20.0mm : 100 14mm : 100 5mm : 99 2.00mm : 96 0.425mm : 37 0.075mm : 29 | | | |
| SOIL MORTAR - SANS 3001 - PR5 | | | |
| Gravel : 1 Sand : 70 Fines : 29 | | | |
| CONSTANTS | | | |
| Grading modules : 1.40 PRA classification : A-2-7 Unified soil classification : SC TRH classification : G9 Liquid Limit : 50 Plasticity Index : 22 Linear Shrinkage : 10.8 | | | |
| MOD AND CBR | | | |
| Test Method for MOD : SANS 3001 - GR30/GR31 | | | |
| Mod AASHTO : 1722 Max DD (Kg/m3) : 12.8 OMC (%) : 12.8 Moulding Moisture (%) : 12.8 | | | |
| TEST METHOD : SANS 3001 - GR40 | | CBR | |
| CBR (%) at 100% Mod AASHTO : 18 CBR (%) at 98% Mod AASHTO : 15 CBR (%) at 97% Mod AASHTO : 14 CBR (%) at 95% Mod AASHTO : 11 CBR (%) at 93% Mod AASHTO : 8 CBR (%) at 90% Mod AASHTO : 6 | | | |
| Swell at Mod AASHTO (%) : 0.0 Swell at NRB (%) : 0.0 Swell at Proctor (%) : 0.1 | | | |
| REMARKS: Material sampling and preparation done as per TMH5, methods MB1, MD1 and MD2 oned as per client request | | | |
| NOTE: The test results are only relevant to the sample tested, which was tested in accordance with the relevant SANS 3001 - GR methods. Any results may only be reproduced in their entirety with the written consent of Langa Geotechnical Services (Pty) Ltd, and any remarks made fall outside the scope of our Accreditation. | | | |
| <div style="text-align: right;">  Technical Signatory- Name: S.N Ngobeni. </div> | | | |



Civil Engineering Lab and
Geotechnical services ,Partnered
with Accredited Lab

Head Office
Pretoria
Silverlakes
0081

OFFICE ADDRESS AND BRANCH

| | | |
|--------------|---------|------------|
| Free State | Limpopo | North Cape |
| Bloemfontain | Vhembe | Kuruman |
| Mangaung | Makhado | Kuruman |
| 9300 | 0955 | 9460 |

| | | | |
|--------------|--|-------------------|----------|
| Client: | LEKO CONSULTING ENGINEERS (PTY)LTD | | |
| Project: | SASOLBURG ZAMDELA GORTIN PHASE 1 TOILETS | | |
| Mix Type: | | | |
| Description: | Dark Brown clay/Orange | Source: | SITE |
| Project No.: | | Sample No.: | S29-2229 |
| Date: | 19 - 01- 2024 | Blackrocklab No.: | BIV2329 |

pH & CONDUCTIVITY - TMH 1 A20 & A21T

| Sample | Sample Position | Depth (m) | pH | Electrical Conductivity S/m |
|----------------------|-------------------|-----------|-------|-----------------------------|
| BIV2329 (Test pit 1) | Black/Yellow Clay | 1.0 - 2.1 | 10.01 | 0.561 |
| BIV2329 (Test pit 3) | Dark brown clay | 0.0 - 0.8 | 9.88 | 0.122 |

Comments:

- Remarks:
1. The results reported relate only to the sample tested, further use of the above information is not the responsibility or liability of Blackrocklab (Pty)Ltd.
 2. This document is the correct record of all measurements made, and may not be reproduced other than with full written approval from the Technical Manager of Blackrocklab.

| | | |
|--|----------------|---------------|
| Technical manager/Approved by: T Ramabulana | Signature: | 19 - 01- 2024 |
|--|----------------|---------------|



METSIMAHOLO LOCAL MUNICIPALITY

**RE-ADVERT: APPOINTMENT OF A 7 CE/GB OR HIGHER CIDB REGISTERED
CONTRACTOR FOR THE CONSTRUCTION OF TOILETS AND SEWER NETWORK
REPAIR IN GORTIN PHASE 1.**

BID NO.: 23/2023/24

PART C5.2
SCHEDULE OF DRAWINGS



LIST OF PLANS FOR TENDERING PURPOSES ONLY

The Drawings listed below bound in a separate book for tender purposes only. The work shall be carried out in accordance with the Contract Drawings which will be issued to the successful tenderer and which will form part of the Contract Document.



METSIMAHOLO LOCAL MUNICIPALITY

BID NO.: 23/2023/24

RE-ADVERT: APPOINTMENT OF A 7 CE/GB OR HIGHER CIDB REGISTERED CONTRACTOR FOR THE CONSTRUCTION OF TOILETS AND SEWER NETWORK REPAIR IN GORTIN PHASE 1.

TENDER DRAWING BOOK

ISSUED BY:

Metsimaholo Local Municipality
Municipal Building, 10 Fichardt Street
Sasolburg
4800

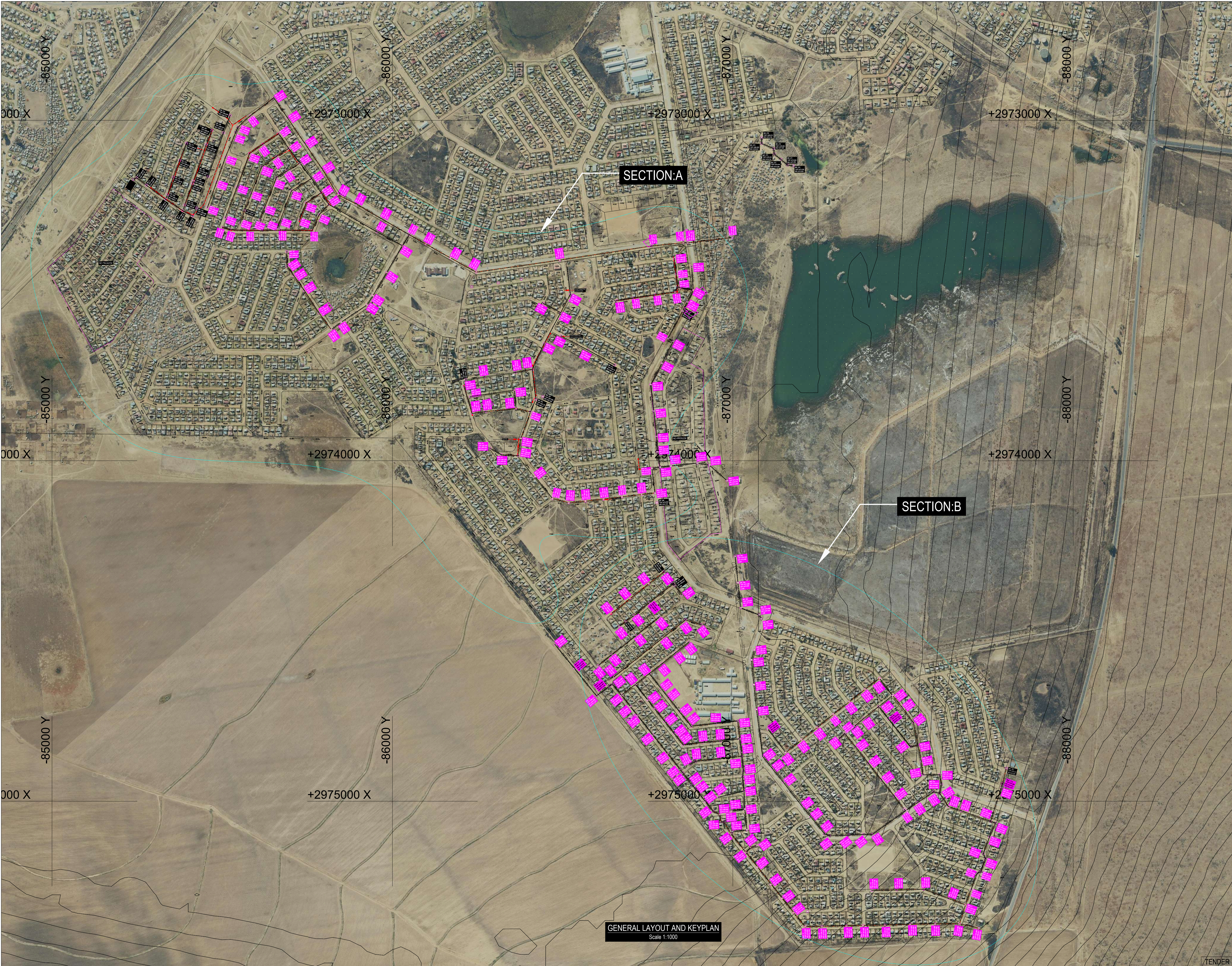
Contact Name: Mr S Bila
Email: sibusiso.bila@metsimaholo.gov.za

PREPARED BY:

Leko Engineering Consultants
862 St Bernard Drive
Garsfontein,
0081

Contact Person: Itumeleng Bogoshi
Email: Clement@leko.co.za





LEGEND:

| REV | BY | DATE | DESCRIPTION |
|-----|----|------|-------------|
| | | | |
| | | | |
| | | | |

| | | |
|----------|--------------|---------------|
| DESIGNED | L. BOGOMO | NOVEMBER 2023 |
| CHECKED | C. BOGOMO | NOVEMBER 2023 |
| DRAWN | B. MNGOMEZAU | NOVEMBER 2023 |
| CHECKED | C. BOGOMO | NOVEMBER 2023 |

CLIENT:

APPROVED: CLIENT

DATE

ARCHITECT:

APPROVED: PRINCIPAL AGENT

DATE

CIVIL & STRUCTURAL ENGINEERS:

CONTACT DETAILS:
ADDRESS: 100 Railway, Mthatha, 5105
PRETORIA: 100 20 Belmont Drive, Gardens, Pretoria, 001
TEL: 011 751 0077
CELL: 082 480 7616
EMAIL: info@leko.co.za
WEB: www.leko.co.za
REG: 2306/1980/03

APPROVED: ENGINEER

DATE

PROJECT TITLE

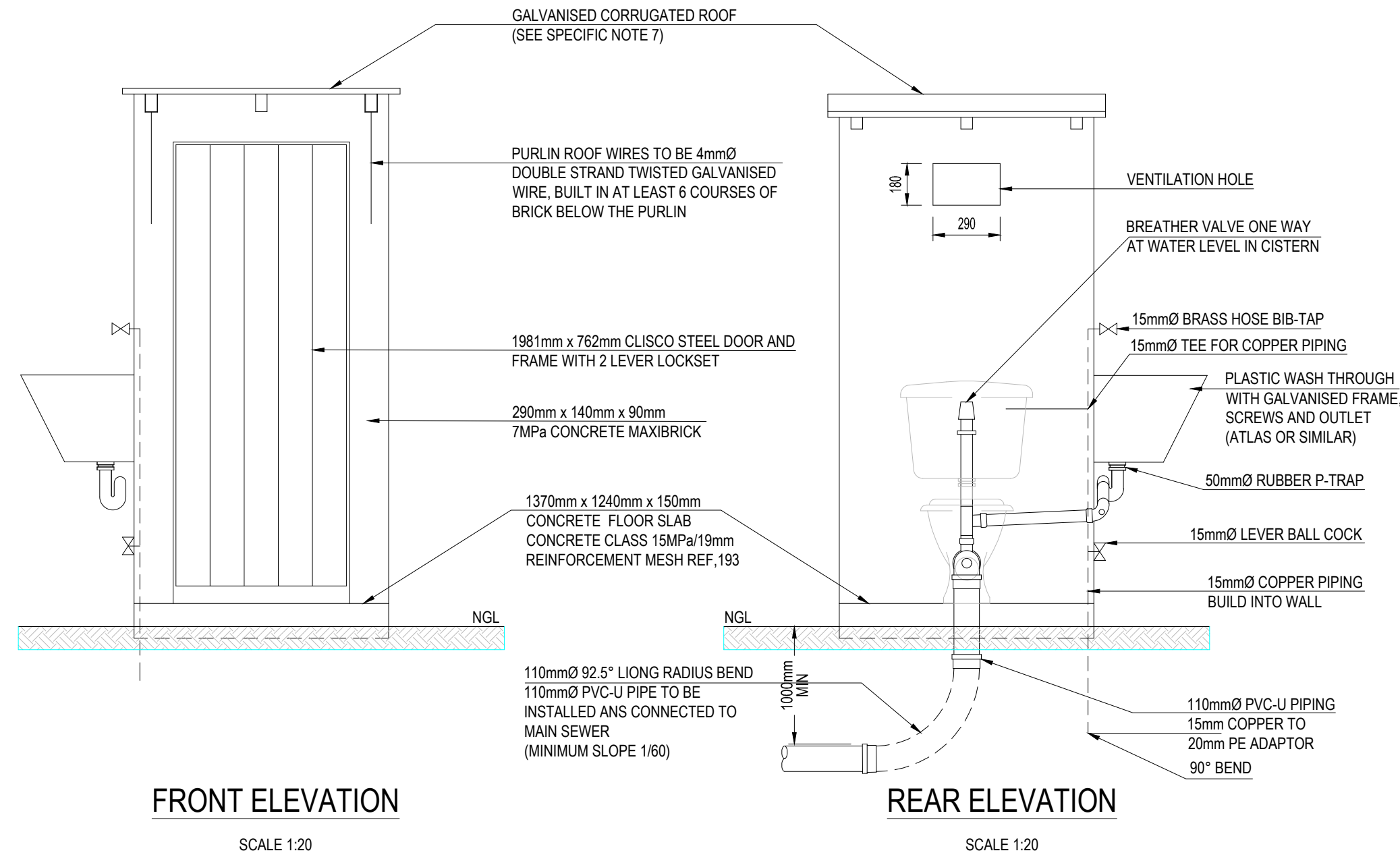
APPOINTMENT OF A CONTRACTOR FOR THE
CONSTRUCTION OF 2000 TOILETS AND
SEWER NETWORK REPAIR IN GORTIN PHASE
1

DRAWING TITLE

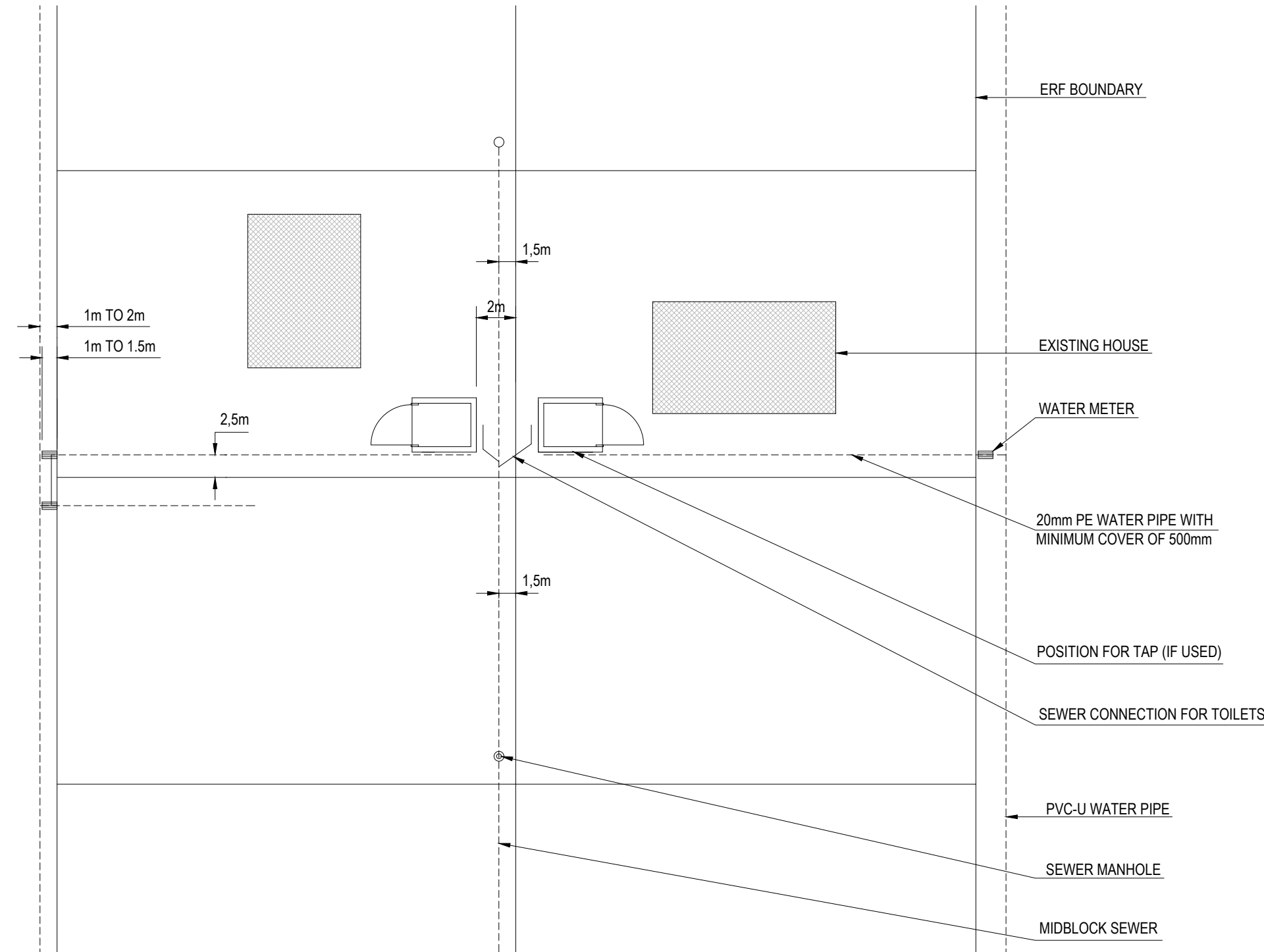
GENERAL LAYOUT AND
KEYPLAN

| | | | |
|------------|-------------|----------|-------|
| FILE No | SCALE | AS SHOWN | SHEET |
| DRAWING No | 7515/CIV/01 | 0 | A1 |

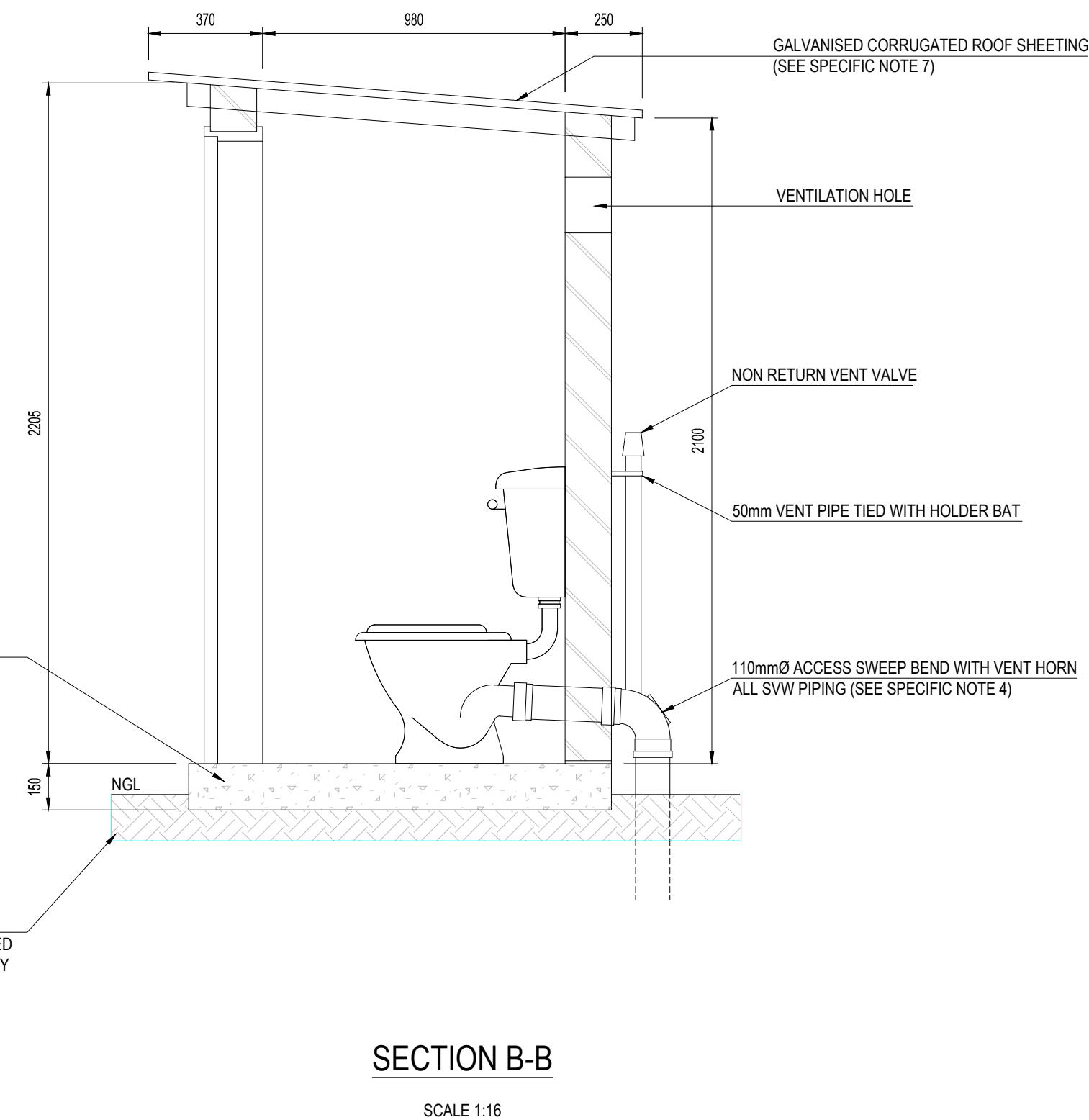
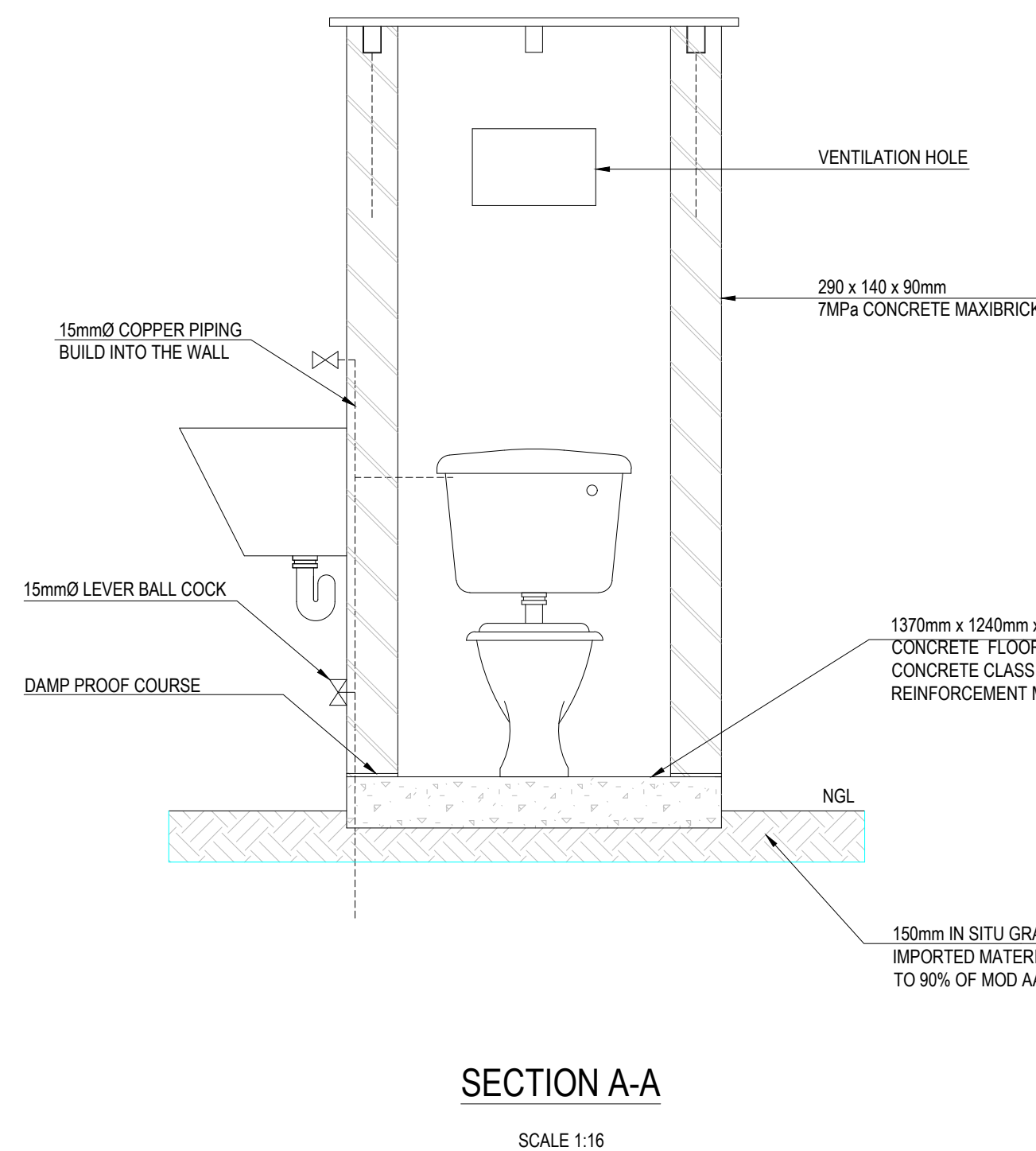
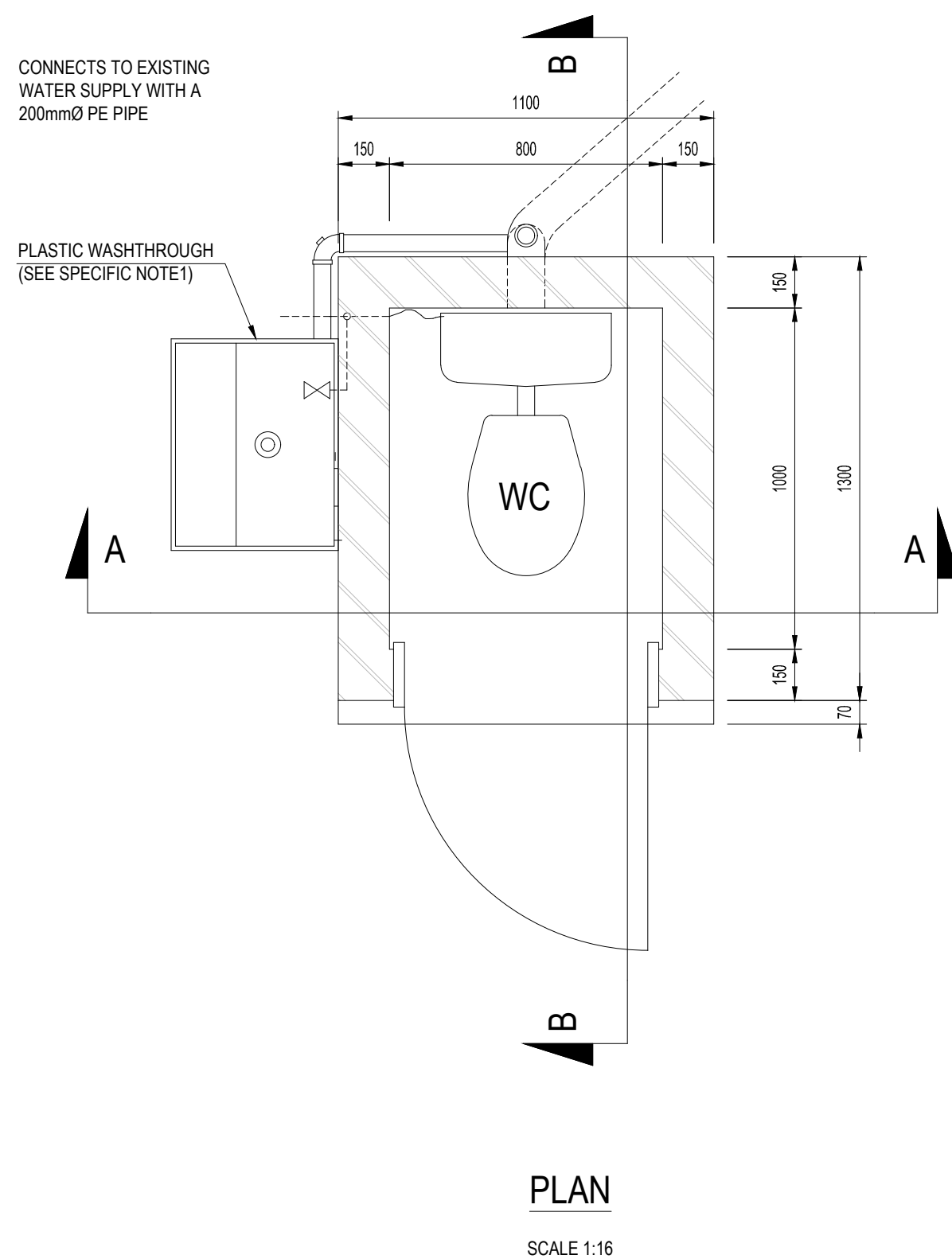
TENDER



EXISTING STREET



TYPICAL SITE LAYOUT PLAN
SCALE 1:50



NOTES:

GENERAL

1. ALL MATERIAL AND WORKMANSHIP MUST COMPLY WITH THE REQUIREMENTS OF THE LATEST RELEVANT STANDARDS.
2. ALL DIMENSIONS ARE IN MILLIMETERS, (UNLESS OTHERWISE SPECIFIED).
3. DO NOT SCALE FROM THIS DRAWINGS.
4. ALL DIMENSIONS MUST BE CHECKED AND APPROVED ON SITE.

SPECIFIC NOTES

1. FIXING BOLTS FOR WASHTROUGH SHOULD NOT BE MORE THAN 30mm FROM CORNER OF METAL FRAME.
2. THE 50mm HOLDERBAT SHOULD NOT BE MORE THAN 50mm BELOW THE VENT VALE.
3. FIT THE WASTE WATER PIPE FROM THE WASHTROUGH TO THE SOIL PIPE. A 50x50mm PVC-U 95° JUNCTION SHOULD BE USED. CARE SHOULD BE TAKEN NOT TO INSTALL THE JUNCTION UPSIDE DOWN.
4. THE 110mmØ PIPE FROM THE TOILET PAN TO THE 110mmØ VENTHORN BEND AND THE VERTICAL 110mmØ PIPE DOWN TO THE 1/2 BEND BELOW GROUND SHOULD BE OF 110mmØ SOIL VENT WASTE (SVW) PIPE, 'THE WHITE PIPE'.
5. DAMP COURSE TO BE PLACED AT THE BOTTOM OF THE WALL.
6. BRICKFORCE SHOULD BE PLACED BETWEEN THE BOTTOM THREE LAYERS AND REPEATED IN EVERY FOURTH LAYER ABOVE.
7. 0.5mm FULL HARD GALVANISED STEEL ROOF SHEETING ON 76x50mm SA PINE GRADE 6 PURLINS ON EDGE ANCHORED 6 BRICK COURSES DEEP INTO MASONRY WORK AT ALL FOUR CORNERS WITH 2 STRANDS OF 4mmØ GALVANISED STEEL WIRE OR GALVANISED LOOP IRON ACCORDING TO NBR SPECIFICATIONS. EXPOSED ENDS SHOULD BE TREATED WITH CREOSOTE.
8. TAP STAND PIPE SHOULD BE 600mm ABOVE GROUND.
9. THE FLUSHING LEVER OF THE CISTERN SHOULD BE ON THE SAME SIDE AS THE WATER INLET TO THE CISTERN.

REV BY DATE DESCRIPTION

| | | |
|----------|----------------|---------------|
| DESIGNED | L. BOGOMO | NOVEMBER 2023 |
| CHECKED | C. BOGOMO | NOVEMBER 2023 |
| DRAWN | B. MNGOMBEZULU | NOVEMBER 2023 |
| CHECKED | C. BOGOMO | NOVEMBER 2023 |

CLIENT:



APPROVED CLIENT

DATE

ARCHITECT



APPROVED PRINCIPAL AGENT

DATE

CIVIL & STRUCTURAL ENGINEERS:



CONTACT DETAILS
OFFICE: 30 Balaam, Mthatha, 5100
PRETORIA: 30 Balaam, Mthatha, 5100
TEL: 011 511 0227
CELL: 081 481 1144
EMAIL: info@leko.co.za
WEB: www.leko.co.za
REG: 2005/11891/23

APPROVED ENGINEER

DATE

PROJECT TITLE

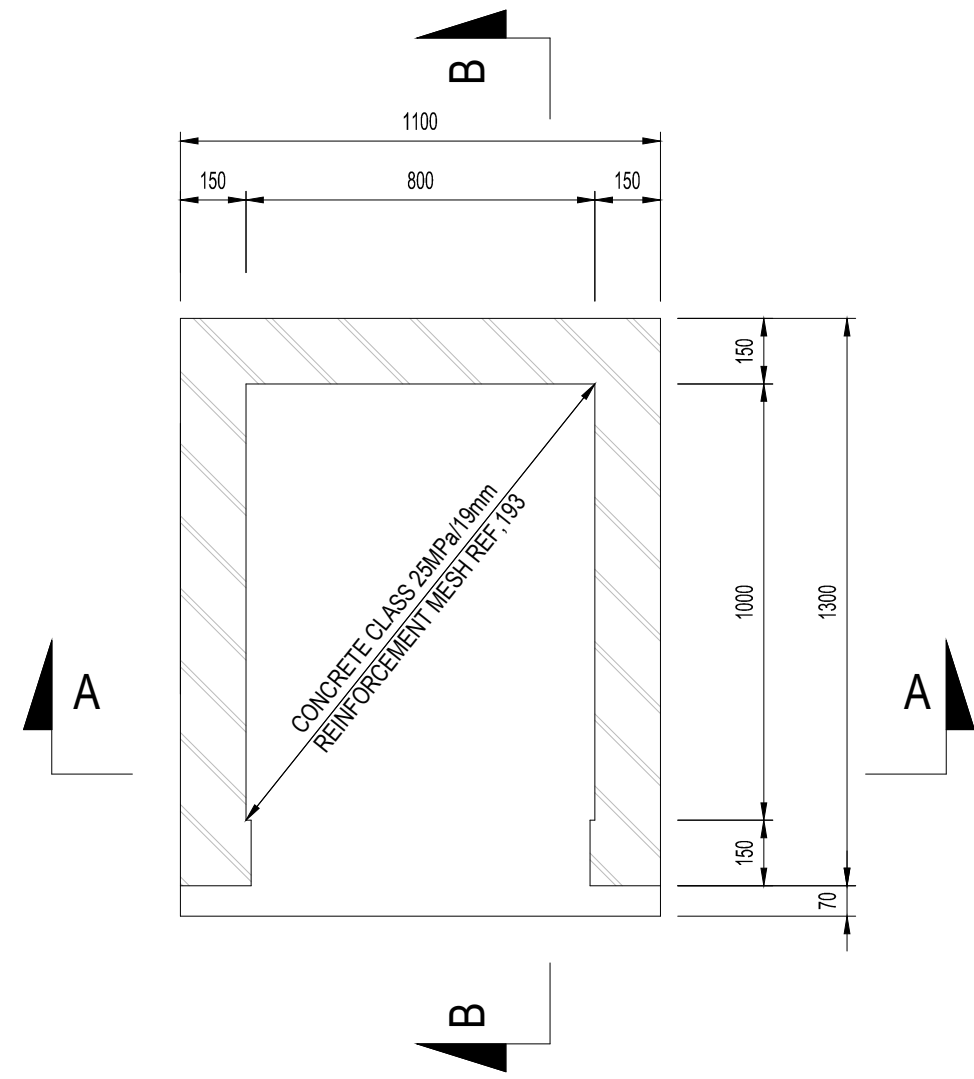
APPOINTMENT OF A CONTRACTOR FOR THE CONSTRUCTION OF 2000 TOILETS AND SEWER NETWORK REPAIR IN GORTIN PHASE 1

DRAWING TITLE

**TOILET STRUCTURE
TYPICAL SITE LAYOUT PLAN
AND ELEVATIONS**

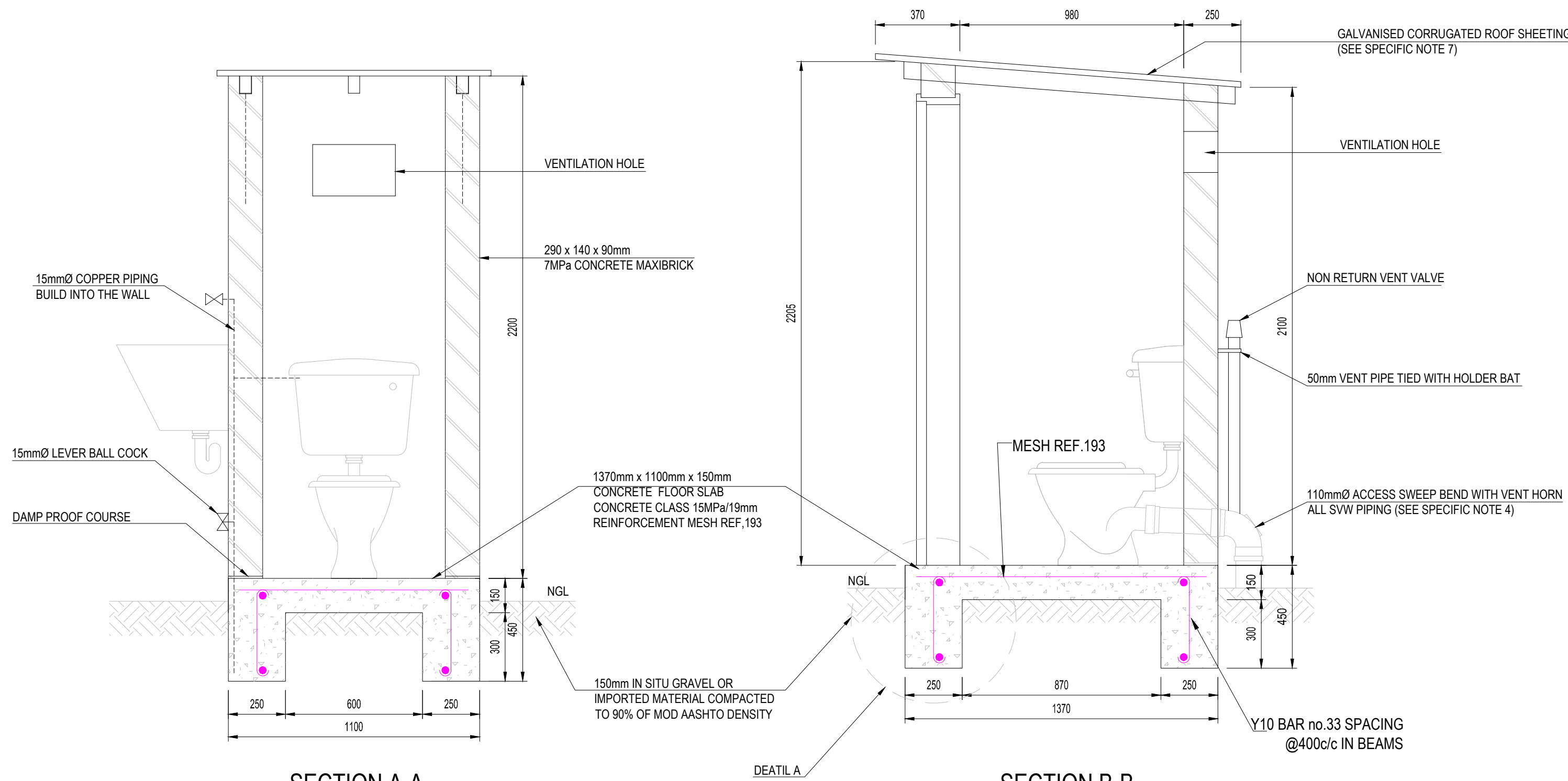
| | | |
|------------|-------------------|---------------|
| FILE No | SCALE AS SHOWN | SHEET A1 |
| DRAWING No | 7515-S105 | REVISION 0 |

TENDER



SURFACE BED LAYOUT

SCALE 1:16

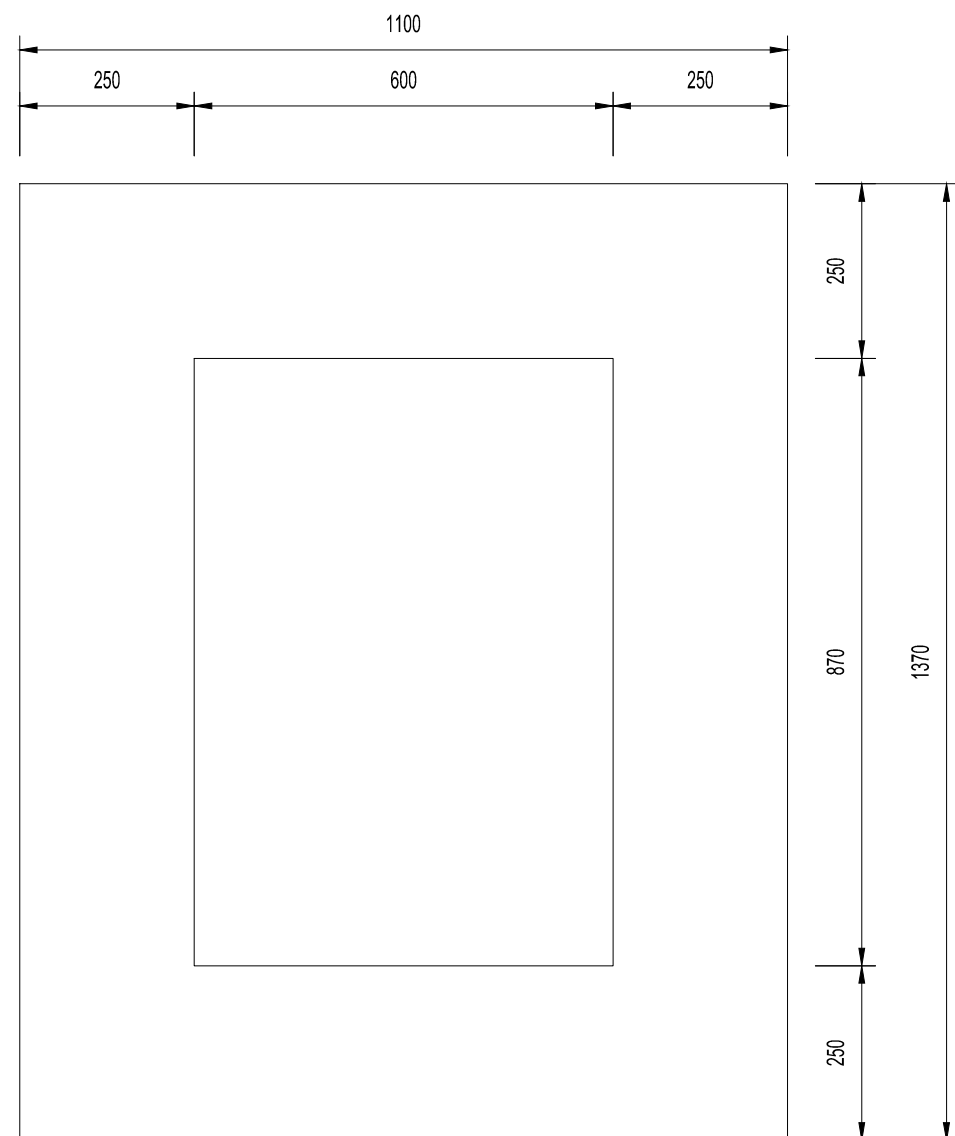


SECTION A-A

SCALE 1:16

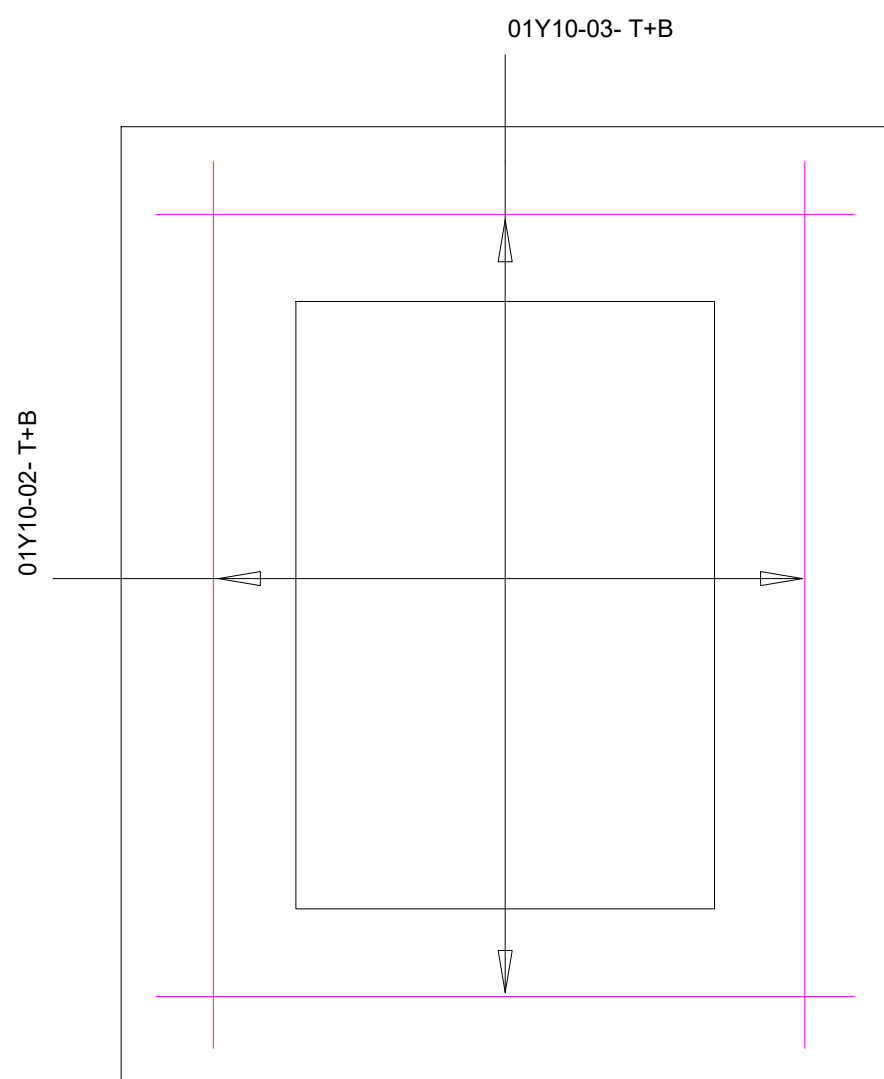
SECTION B-B

SCALE 1:16



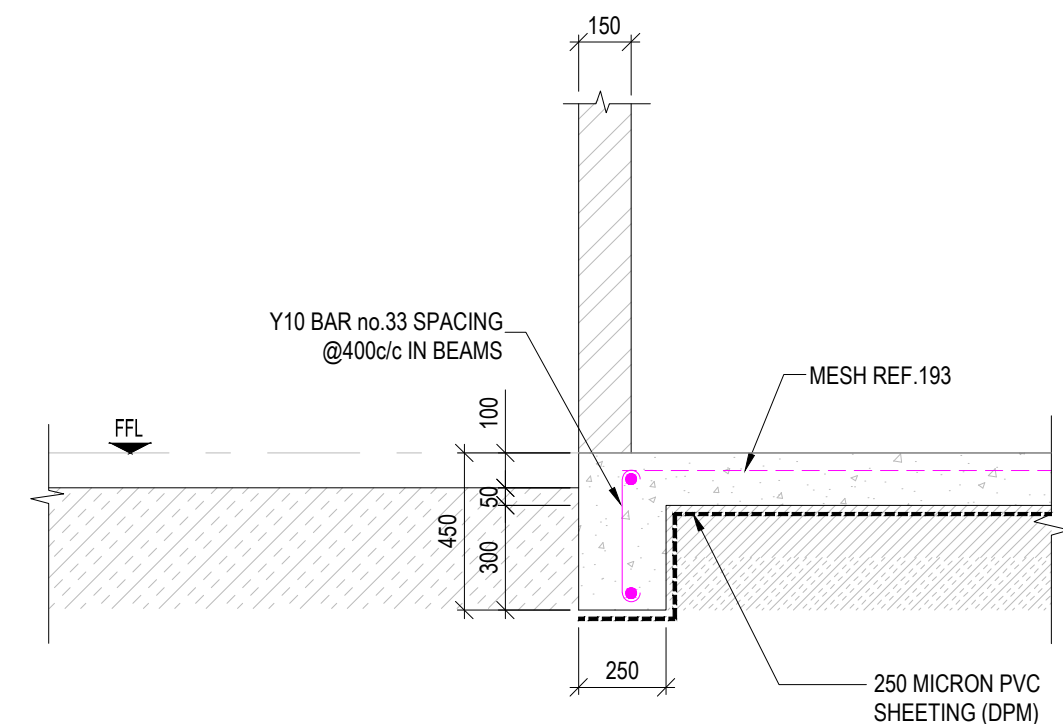
FOUNDATION LAYOUT

SCALE 1:10



REINFORCEMENT LAYOUT

SCALE 1:10

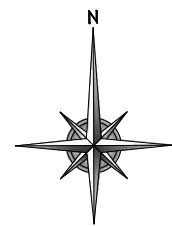


DETAIL A: TYPICAL SECTION OF BEAM(250x600)

SCALE 1:20

BENDING SCHEDULE: Metsimaholo Toilet

| MEMBER | BAR MARK | TYPE & SIZE | No. OF MEMBERS | No. OF BARS | TOTAL No. | BAR LENGTH | SHAPE CODE | A mm | B mm | C mm | D mm | N mm |
|-------------------------------|----------|-------------|----------------|-------------|---------------------|---------------------|------------|------|------|------|------|------|
| Toilets Facility | 01 | Y10 | 1 | 10 | 10 | 450 | 33 | 350 | 100 | | | |
| | 02 | Y10 | 2 | 2 | 4 | 1270 | 20 | 1270 | | | | |
| | 03 | Y10 | 2 | 2 | 4 | 1000 | 20 | 1000 | | | | |
| Mesh Ref 1,93 with an area of | | | | | 1,70 m ² | and a total mass of | | | | | 3 kg | |
| | | | | | R-BARS = | 0 kg | | | | | | |
| | | | | | Y-BARS = | 8 kg | | | | | | |



NOTES:

GENERAL

1. ALL MATERIAL AND WORKMANSHIP MUST COMPLY WITH THE REQUIREMENTS OF THE LATEST RELEVANT SANS REQUIREMENTS.
2. ALL DIMENSIONS ARE IN MILLIMETERS. (UNLESS OTHERWISE SPECIFIED).
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7. 0.5mm FULL HARD GALVANISED STEEL ROOF SHEETING ON 76x60mm SA PINE GRADE 6 PURLINS ON EDGE ANCHORED 6 BRICK COURSES DEEP INTO MASONRY WORK AT ALL FOUR CORNERS WITH 2 STRANDS OF 4mmØ GALVANISED STEEL WIRE OR GALVANISED LOOP IRON ACCORDING TO NBR SPECIFICATIONS. EXPOSED ENDS SHOULD BE TREATED WITH CREOSOTE.
8. TAP STAND PIPE SHOULD BE 600mm ABOVE GROUND.
9. THE FLUSHING LEVER OF THE CISTERN SHOULD BE ON THE SAME SIDE AS THE WATER INLET TO THE CISTERN.

REV. BY DATE DESCRIPTION

| | | |
|----------|------------|---------------|
| DESIGNED | L. BISOCHI | NOVEMBER 2023 |
| CHECKED | C. BOKAKO | NOVEMBER 2023 |
| DRAWN | BLIMONDOZU | NOVEMBER 2023 |
| CHECKED | C. BOKAKO | NOVEMBER 2023 |

CLIENT:



APPROVED: CLIENT

DATE

ARCHITECT:



APPROVED: PRINCIPAL AGENT

DATE

CIVIL & STRUCTURAL ENGINEERS



CONTACT DETAILS
ADDRESS: 31 Senekela, Mthatha, 5100
PRETORIA: 401 St Bernard Drive, Carletonville, Pretoria, 0181
TEL: 011 551 0074
CELL: 081 441 7874
EMAIL: info@leko.co.za
WEB: www.leko.co.za
REG. NO: 2008/11895123

APPROVED: ENGINEER

DATE

PROJECT TITLE

APPOINTMENT OF A CONTRACTOR FOR THE CONSTRUCTION OF 2000 TOILETS AND SEWER NETWORK REPAIR IN GORTIN PHASE 1

DRAWING TITLE

TOILET STRUCTURE FOUNDATION, REINFORCEMENT AND SECTIONAL DETAILS

FILE No

SCALE AS SHOWN

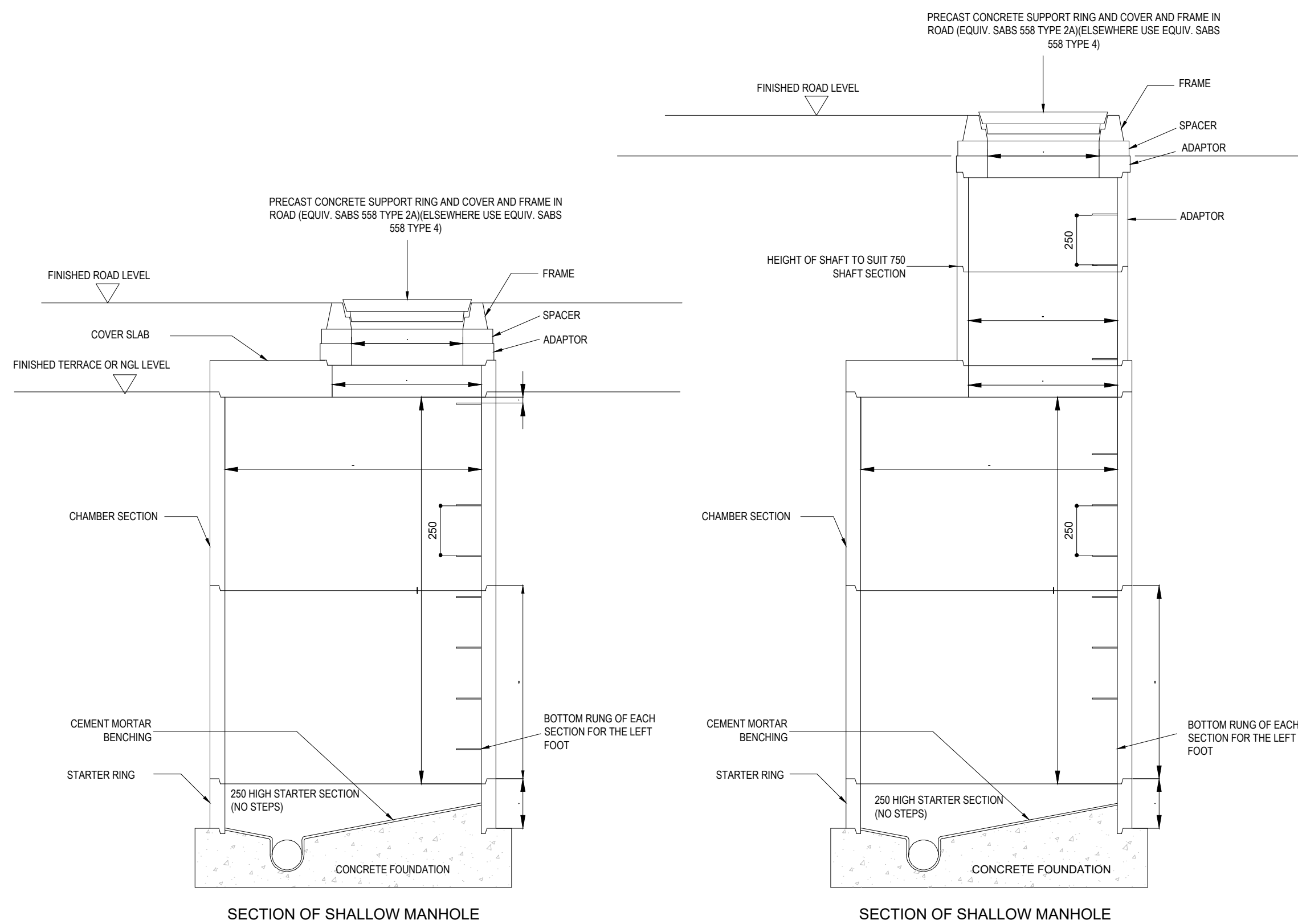
SHEET A1

DRAWING No

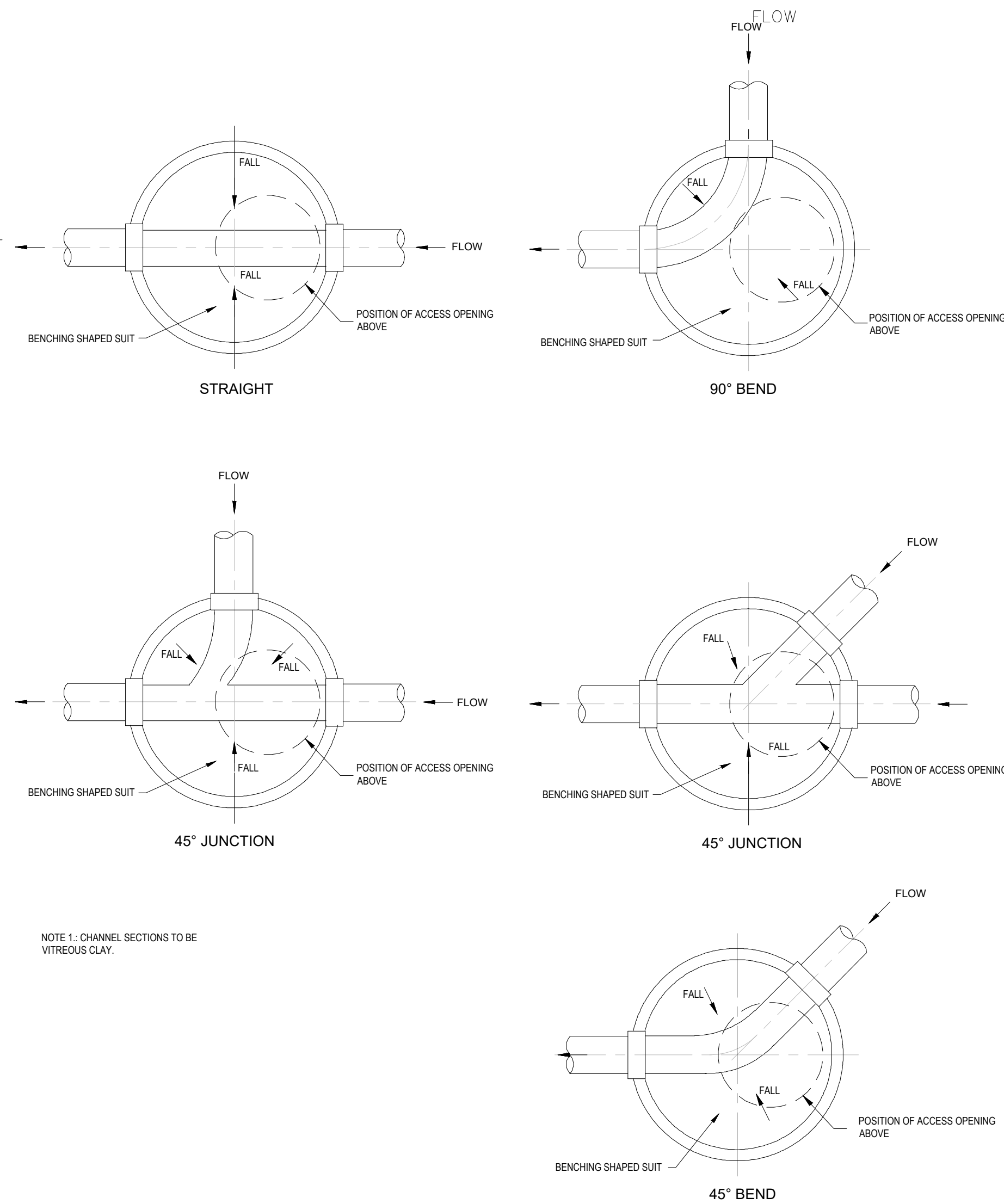
REVISION

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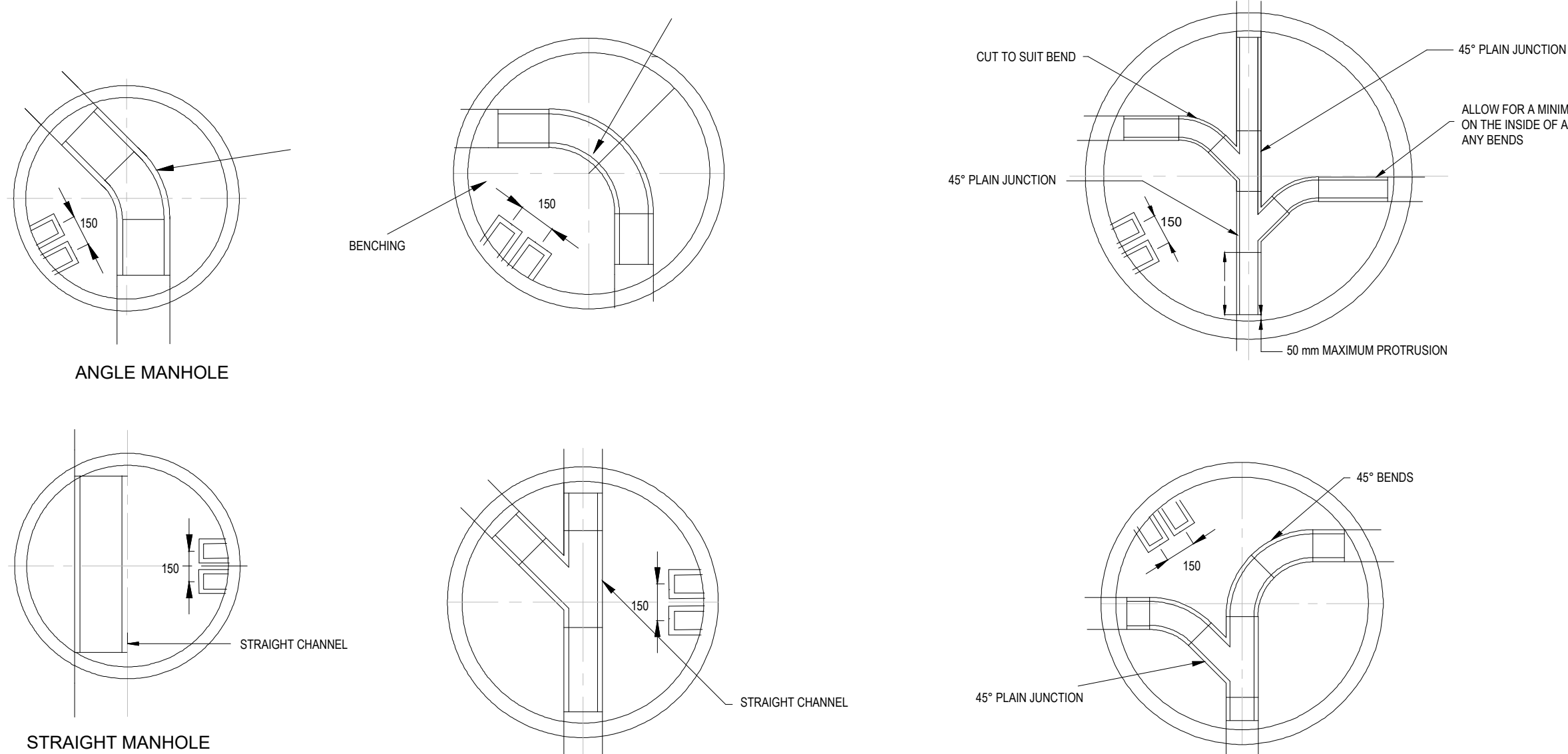
TENDER



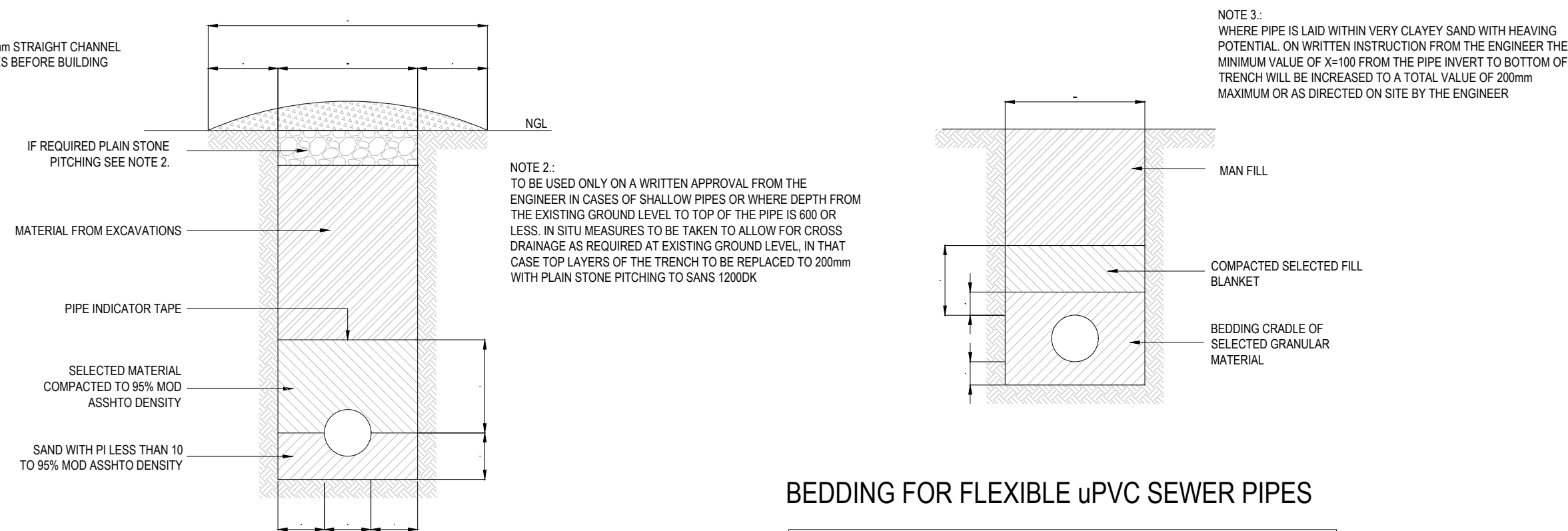
TYPICAL DETAILS OF PRECAST MANHOLES



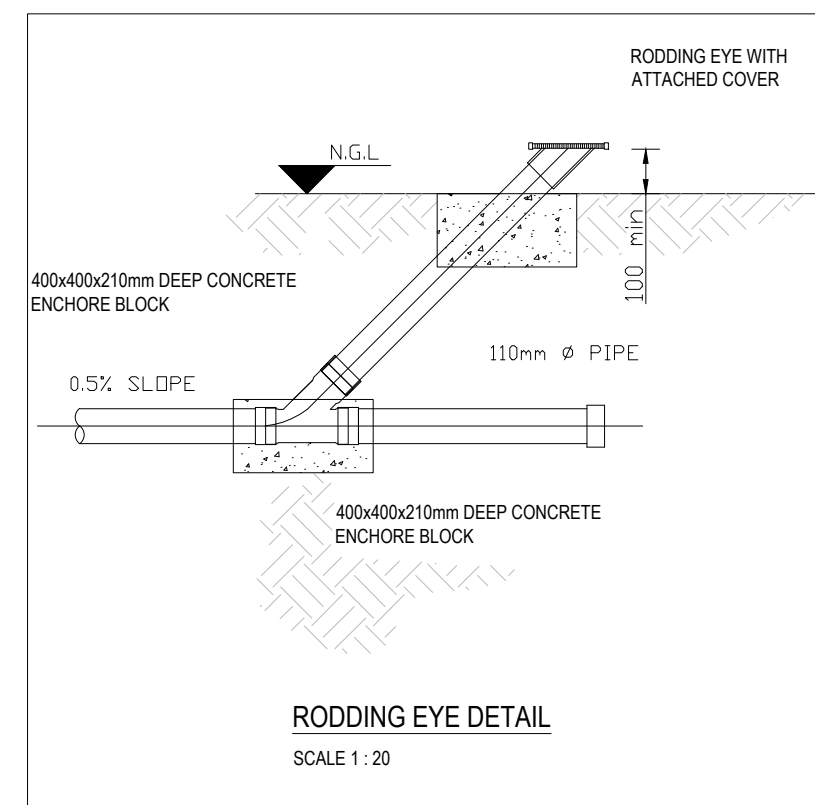
TYPICAL DETAILS OF JUNCTIONS IN MANHOLE



TYPICAL PLAN LAYOUT OF MANHOLES



BEDDING FOR FLEXIBLE uPVC SEWER PIPES



NOTES :

1. LH = LAIRHOLE
2. MAX. 3 DWELLING UNITS ON NEW SEWER LINE

| REV | BY | DATE | DESCRIPTION |
|-----|----|------|-------------|
|-----|----|------|-------------|

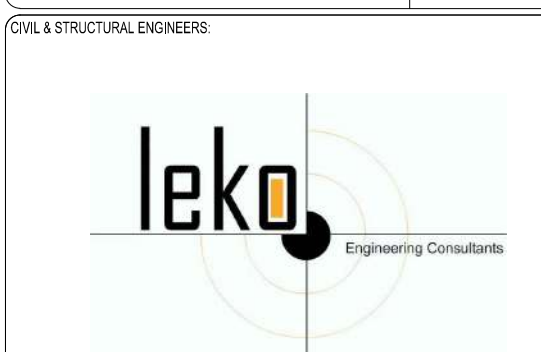
| | | |
|----------|-----------|---------------|
| DESIGNED | I. BOGOSH | NOVEMBER 2023 |
| CHECKED | C. BOGASH | NOVEMBER 2023 |
| DRAWN | B. MOGOSH | NOVEMBER 2023 |
| CHECKED | C. BOGASH | NOVEMBER 2023 |



| | |
|-----------------|------|
| APPROVED CLIENT | DATE |
|-----------------|------|



| | |
|--------------------------|------|
| APPROVED PRINCIPAL AGENT | DATE |
|--------------------------|------|



| | |
|-----------------|---|
| CONTACT DETAILS | 35 Shereza Mkhale, 5103 |
| OFFICE | 162 St. Mary's Drive, Grahamstown, 6051 |
| TEL | (041) 011 0010 |
| CELL | (081) 481 0010 |
| EMAIL | info@leko.co.za |
| WEB | www.leko.co.za |
| REG | 2005/17881/13 |

| | |
|-------------------|------|
| APPROVED ENGINEER | DATE |
|-------------------|------|

PROJECT TITLE
APPOINTMENT OF A CONTRACTOR FOR THE CONSTRUCTION OF 2000 TOILETS AND SEWER NETWORK REPAIR IN GORTIN PHASE 1

DRAWING TITLE
PIPE BEDDING, MANHOLES AND INSPECTION EYES DETAILS

| | | |
|------------|----------------|----------|
| FILE No | SCALE AS SHOWN | SHEET A1 |
| DRAWING No | REVISION | 0 |

TENDER

7515-S108



GENERAL LAYOUT
SCALE: 1:1500

| Sewer Schedule | | | | | | | | | | | | |
|----------------|-----------|------------|---------|---------|--------|-------|--------|-------|--------|----------|-----------|--|
| Name | Y-Coord | X-Coord | Cover | Inlet | Length | Depth | Slope | Type | Size | Level In | Level Out | |
| MH1.23 | -85456.24 | 2973256.06 | 1490.45 | 1489.63 | 79.57 | 0.82 | 0.45 % | PVC-U | 110 mm | 1489.63 | 1489.28 | |
| MH1.22 | -85483.28 | 2973181.22 | 1490.30 | 1489.28 | 78.55 | 1.02 | 0.54 % | PVC-U | 110 mm | 1489.28 | 1488.85 | |
| MH1.21 | -85509.77 | 2973107.27 | 1489.86 | 1488.85 | 78.84 | 1.01 | 0.37 % | PVC-U | 110 mm | 1488.85 | 1488.56 | |
| MH1.20 | -85539.67 | 2973034.32 | 1489.60 | 1488.56 | 78.84 | 1.04 | 0.26 % | PVC-U | 110 mm | 1488.56 | 1488.38 | |
| MH1.19 | -85546.28 | 2973020.31 | 1489.55 | 1488.52 | 15.48 | 1.03 | 0.28 % | PVC-U | 110 mm | 1488.52 | 1488.38 | |
| MH1.18 | -85582.08 | 2972987.11 | 1489.38 | 1488.38 | 48.83 | 1.00 | 0.30 % | PVC-U | 110 mm | 1488.38 | 1488.12 | |
| MH1.17 | -85651.62 | 2972934.01 | 1488.99 | 1488.12 | 87.50 | 0.87 | 0.19 % | PVC-U | 110 mm | 1488.12 | 1487.99 | |
| MH1.16 | -85692.82 | 2972994.18 | 1489.33 | 1487.99 | 89.89 | 1.34 | 0.15 % | PVC-U | 110 mm | 1487.99 | 1487.85 | |
| MH1.15 | -85743.45 | 2973068.45 | 1489.34 | 1487.85 | 90.06 | 1.49 | 0.24 % | PVC-U | 110 mm | 1487.85 | 1487.64 | |
| MH1.14 | -85794.02 | 2973142.98 | 1490.11 | 1487.64 | 87.63 | 2.47 | 0.25 % | PVC-U | 110 mm | 1487.64 | 1487.42 | |
| MH1.13 | -85845.12 | 2973214.16 | 1490.30 | 1487.42 | 58.57 | 2.87 | 0.23 % | PVC-U | 110 mm | 1487.42 | 1487.29 | |
| MH1.12 | -85894.64 | 2973245.45 | 1490.65 | 1487.29 | 3.36 | 3.84 | 0.31 % | PVC-U | 110 mm | 1487.29 | 1487.02 | |
| MH1.11 | -85970.31 | 2973290.21 | 1490.86 | 1487.02 | 91.64 | 3.72 | 0.37 % | PVC-U | 110 mm | 1487.02 | 1486.68 | |
| MH1.9 | -86049.68 | 2973336.02 | 1490.40 | 1486.68 | 55.57 | 3.59 | 0.30 % | PVC-U | 160 mm | 1486.68 | 1486.52 | |
| MH1.8 | -86098.36 | 2973362.82 | 1490.11 | 1486.52 | 83.62 | 3.41 | 0.26 % | PVC-U | 160 mm | 1486.52 | 1486.30 | |
| MH1.7 | -86170.79 | 2973404.62 | 1489.70 | 1486.30 | 85.99 | 3.42 | 0.28 % | PVC-U | 160 mm | 1486.30 | 1486.05 | |
| MH1.6 | -86246.36 | 2973445.64 | 1489.48 | 1486.05 | 247.69 | 4.17 | 0.64 % | PVC-U | 160 mm | 1486.05 | 1484.47 | |
| MH1.5 | -86491.51 | 2973410.23 | 1488.64 | 1484.47 | 273.20 | 4.17 | 0.74 % | PVC-U | 160 mm | 1484.47 | 1482.44 | |
| MH1.4 | -86781.64 | 2973369.43 | 1485.61 | 1482.44 | 94.32 | 3.17 | 0.49 % | PVC-U | 160 mm | 1482.44 | 1481.98 | |
| MH1.3 | -86855.38 | 2973358.99 | 1484.82 | 1481.98 | 12.92 | 2.84 | 1.97 % | PVC-U | 160 mm | 1481.98 | 1481.73 | |
| MH1.2 | -86868.19 | 2973360.63 | 1484.65 | 1481.73 | 126.35 | 2.93 | 2.59 % | PVC-U | 160 mm | 1481.73 | 1478.45 | |
| MH1.1 | -86993.56 | 2973344.93 | 1479.14 | 1478.45 | | 0.69 | | | | | | |
| MH1.32 | -85500.81 | 2973314.52 | 1490.88 | 1490.04 | 22.74 | 0.84 | 0.24 % | PVC-U | 110 mm | 1490.04 | 1489.99 | |
| MH1.31 | -85522.50 | 2973321.36 | 1490.84 | 1489.99 | 53.12 | 0.86 | 0.30 % | PVC-U | 110 mm | 1489.99 | 1489.83 | |
| MH1.30 | -85575.53 | 2973324.50 | 1490.85 | 1489.83 | 95.68 | 1.03 | 0.37 % | PVC-U | 110 mm | 1489.83 | 1489.48 | |
| MH1.29 | -85671.19 | 2973322.75 | 1490.74 | 1489.48 | 92.54 | 1.27 | 0.30 % | PVC-U | 110 mm | 1489.48 | 1489.20 | |
| MH1.28 | -85763.70 | 2973324.93 | 1490.56 | 1489.20 | 53.07 | 1.36 | 0.88 % | PVC-U | 110 mm | 1489.20 | 1488.73 | |
| MH1.27 | -85785.16 | 2973276.39 | 1490.58 | 1488.73 | 40.77 | 1.85 | 1.79 % | PVC-U | 110 mm | 1488.73 | 1488.00 | |
| MH1.25 | -85813.57 | 2973247.17 | 1490.39 | 1488.00 | 162.74 | 2.39 | 0.19 % | PVC-U | 110 mm | 1488.00 | 1487.70 | |
| MH1.24 | -85955.03 | 2973327.62 | 1490.69 | 1487.70 | 84.28 | 3.00 | 0.50 % | PVC-U | 110 mm | 1487.70 | 1487.28 | |
| MH1.10 | -86028.93 | 2973368.15 | 1490.45 | 1487.28 | 38.24 | 3.18 | 1.56 % | PVC-U | 110 mm | 1487.28 | 1486.68 | |
| MH1.9 | -86049.68 | 2973336.02 | 1490.40 | 1486.68 | | 3.72 | | | | | | |
| MH1.42 | -85689.97 | 2973385.97 | 1490.74 | 1489.86 | 43.13 | 0.88 | 0.50 % | PVC-U | 110 mm | 1489.86 | 1489.65 | |
| MH1.41 | -85691.08 | 2973429.09 | 1490.89 | 1489.65 | 34.58 | 1.24 | 0.59 % | PVC-U | 110 mm | 1489.65 | 1489.44 | |
| MH1.40 | -85711.10 | 2973457.28 | 1490.89 | 1489.44 | 51.83 | 1.44 | 0.29 % | PVC-U | 110 mm | 1489.44 | 1489.29 | |
| MH1.39 | -85740.92 | 2973499.67 | 1490.76 | 1489.29 | 78.91 | 1.47 | 0.24 % | PVC-U | 110 mm | 1489.29 | 1489.10 | |
| MH1.38 | -85784.32 | 2973565.58 | 1490.75 | 1489.10 | 61.26 | 1.65 | 0.23 % | PVC-U | 110 mm | 1489.10 | 1488.96 | |
| MH1.37 | -85820.42 | 2973615.08 | 1490.85 | 1488.96 | 36.85 | 1.89 | 0.32 % | PVC-U | 110 mm | 1488.96 | 1488.85 | |
| MH1.36 | -85849.71 | 2973592.72 | 1490.84 | 1488.85 | 91.05 | 2.00 | 0.50 % | PVC-U | 110 mm | 1488.85 | 1488.39 | |
| MH1.35 | -85925.58 | 2973542.39 | 1490.77 | 1488.39 | 32.63 | 2.38 | 0.70 % | PVC-U | 110 mm | 1488.39 | 1488.16 | |
| MH1.34 | -85943.20 | 2973514.93 | 1490.80 | 1488.16 | 78.90 | 2.64 | 0.53 % | PVC-U | 110 mm | 1488.16 | 1487.74 | |
| MH1.33 | -85983.47 | 2973447.08 | 1490.69 | 1487.74 | 91.09 | 2.95 | 0.51 % | PVC-U | 110 mm | 1487.74 | 1487.28 | |
| MH1.10 | -86028.93 | 2973368.15 | 1490.45 | 1487.28 | | 3.18 | | | | | | |
| MH1.47 | -85662.68 | 2973315.48 | 1490.68 | 1489.87 | 24.08 | 0.80 | 0.73 % | PVC-U | 110 mm | 1489.87 | 1489.70 | |
| MH1.46 | -85671.19 | 2973292.96 | 1490.66 | 1489.70 | 91.32 | 0.96 | 0.56 % | PVC-U | 110 mm | 1489.70 | 1489.19 | |
| MH1.45 | -85703.34 | 2973207.48 | 1490.27 | 1489.19 | 69.84 | 1.08 | 1.05 % | PVC-U | 110 mm | 1489.19 | 1488.46 | |
| MH1.43 | -85762.76 | 2973170.79 | 1490.18 | 1488.46 | 50.28 | 1.73 | 0.39 % | PVC-U | 110 mm | 1488.46 | 1488.26 | |
| MH1.26 | -85790.66 | 2973212.62 | 1490.35 | 1488.26 | 41.45 | 2.09 | 0.62 % | PVC-U | 110 mm | 1488.26 | 1488.00 | |
| MH1.25 | -85813.57 | 2973247.17 | 1490.39 | 1488.00 | | 2.39 | | | | | | |
| MH1.49 | -85726.46 | 2973292.89 | 1490.60 | 1489.78 | 54.70 | 0.83 | 0.63 % | PVC-U | 110 mm | 1489.78 | 1489.43 | |
| MH1.48 | -85746.76 | 2973242.10 | 1490.46 | 1489.43 | 52.88 | 1.02 | 2.22 % | PVC-U | 110 mm | 1489.43 | 1488.26 | |
| MH1.26 | -85790.66 | 2973212.62 | 1490.35 | 1488.26 | | 2.09 | | | | | | |
| MH1.53 | -85611.23 | 2973293.46 | 1490.63 | 1489.96 | 39.74 | 0.66 | 0.27 % | PVC-U | 110 mm | 1489.96 | 1489.86 | |
| MH1.52 | -85624.66 | 2973256.06 | 1490.47 | 1489.86 | 93.78 | 0.61 | 0.33 % | PVC-U | 110 mm | 1489.86 | 1489.55 | |
| MH1.51 | -85658.78 | 2973168.71 | 1490.15 | 1489.55 | 36.66 | 0.61 | 0.44 % | PVC-U | 110 mm | 1489.55 | 1489.38 | |
| MH1.50 | -85689.67 | 2973148.96 | 1489.97 | 1489.38 | 46.58 | 0.59 | 1.47 % | PVC-U | 110 mm | 1489.38 | 1488.70 | |
| MH1.44 | -85729.14 | 2973124.22 | 1489.90 | 1488.70 | 57.44 | 1.20 | 0.42 % | PVC-U | 110 mm | 1488.70 | 1488.46 | |
| MH1.43 | -85762.76 | 2973170.79 | 1490.18 | 1488.46 | | 1.73 | | | | | | |
| MH1.38 | -85552.66 | 2973302.10 | 1490.82 | 1490.39 | 94.69 | 0.43 | 0.57 % | PVC-U | 110 mm | 1490.39 | 1489.86 | |
| MH1.57 | -85585.82 | 2973213.41 | 1490.31 | 1489.86 | 82.93 | 0.46 | 0.57 % | PVC-U | 110 mm | 1489.86 | 1489.38 | |
| MH1.56 | -85616.03 | 2973136.18 | 1489.91 | 1489.38 | 52.13 | 0.53 | 0.44 % | PVC-U | 110 mm | 1489.38 | 1489.16 | |
| MH1.55 | -85658.86 | 2973106.46 | 1489.80 | 1489.16 | 43.58 | 0.65 | 0.83 % | PVC-U | 110 mm | 1489.16 | 1488.80 | |
| MH1.54 | -85695.26 | 2973082.51 | 1489.63 | 1488.80 | 53.73 | 0.84 | 0.18 % | PVC-U | 110 mm | 1488.80 | 1488.70 | |
| MH1.44 | -85729.14 | 2973124.22 | 1489.90 | 1488.70 | | 1.20 | | | | | | |
| MH1.63 | -85509.20 | 2973286.34 | 1490.84 | 1490.04 | | 0.80 | | | | | | |
| MH1.62 | -85543.57 | 2973195.47 | 1490.21 | 1489.57 | 97.15 | 0.64 | 0.48 % | PVC-U | 110 mm | 1490.04 | 1489.57 | |
| MH1.61 | -85580.27 | 2973097.61 | 1489.75 | 1489.17 | 104.52 | 0.59 | 0.39 % | PVC-U | 110 mm | 1489.57 | 1489.17 | |
| MH1.60 | -85619.20 | 2973070.47 | 1489.55 | 1489.02 | 47.45 | 0.52 | 0.31 % | PVC-U | 110 mm | 1489.17 | 1489.02 | |
| MH1.59 | -85665.61 | 2973039.65 | 1489.52 | 1488.92 | 55.72 | 0.52 | 0.17 % | PVC-U | 110 mm | 1489.02 | 1488.92 | |
| MH1.54 | -85695.26 | 2973082.51 | 1489.63 | 1488.80 | 52.11 | 0.84 | 0.25 % | PVC-U | 110 mm | 1488.92 | 1488.80 | |

NOTES :

- 1. LH = LAMPHOUSE
- 2. MAX. 3 DWELLING UNITS ON NEW SEWER LINE

| REV | BY | DATE | DESCRIPTION |
|-----|----|------|-------------|
|-----|----|------|-------------|

| | | |
|----------|------------|---------------|
| DESIGNED | S. DODD | NOVEMBER 2023 |
| CHECKED | C. DODD | NOVEMBER 2023 |
| DRAWN | B. MANGENI | NOVEMBER 2023 |
| CHECKED | C. DODD | NOVEMBER 2023 |

CLIENT:

| | |
|-----------------|------|
| APPROVED CLIENT | DATE |
|-----------------|------|

ARCHITECT:

| | |
|--------------------------|------|
| APPROVED PRINCIPAL AGENT | DATE |
|--------------------------|------|

CIVIL & STRUCTURAL ENGINEERS:

| | |
|-----------------|---------------------------|
| CONTACT DETAILS | |
| ADDRESS | 35 Balfour, Mthatha, 5103 |
| TEL | 082 101 007 |
| CELL | 082 402 1014 |
| EMAIL | info@leko.co.za |
| WEB | www.leko.co.za |
| REG | 2007/0000000 |

| | |
|-------------------|------|
| APPROVED ENGINEER | DATE |
|-------------------|------|

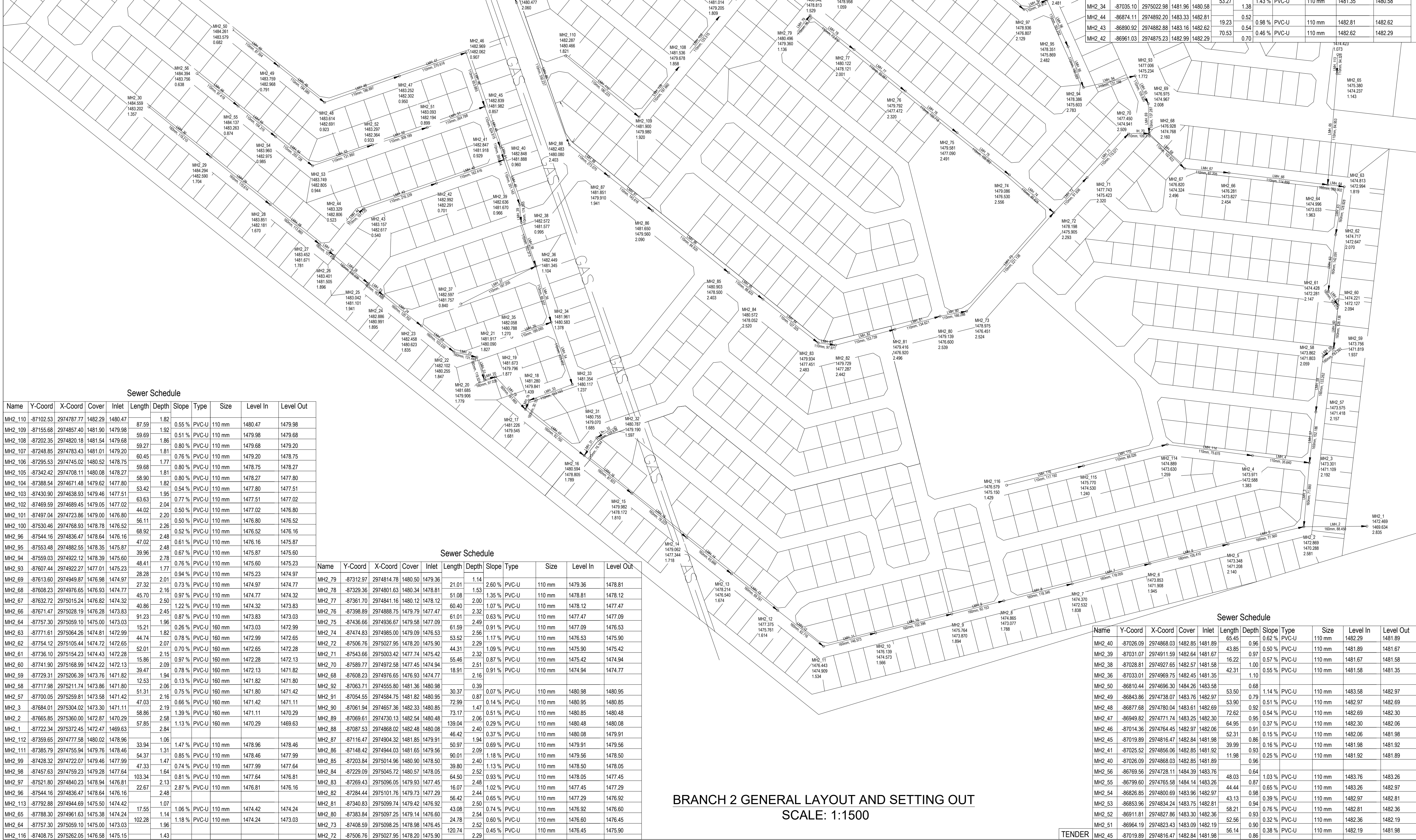
PROJECT TITLE
APPOINTMENT OF A CONTRACTOR FOR THE CONSTRUCTION OF 2000 TOILETS AND SEWER NETWORK REPAIR IN GORTIN PHASE 1

DRAWING TITLE
BRANCH 2 GENERAL LAYOUT & SETTING OUT

| | | |
|------------|----------|-------|
| FILE NO | SCALE | SHEET |
| DRAWING NO | AS SHOWN | A1 |
| 7515-S1-01 | | 0 |

TENDER

| Sewer Schedule | | | | | | | | | | | |
|----------------|-----------|------------|---------|---------|--------|-------|-------|-------|--------|----------|-----------|
| Name | Y-Coord | X-Coord | Cover | Inlet | Length | Depth | Slope | Type | Size | Level In | Level Out |
| MH2_115 | -87481.39 | 2975260.40 | 1475.77 | 1474.53 | 79.22 | 1.24 | 1.14 | PVC-U | 110 mm | 1474.53 | 1474.53 |
| MH2_114 | -87560.59 | 2975258.43 | 1474.89 | 1473.63 | | 1.26 | 1.32 | PVC-U | 110 mm | 1473.63 | 1472.59 |
| MH2_4 | -87634.54 | 2975285.82 | 1473.97 | 1472.59 | 52.71 | 1.38 | 1.81 | PVC-U | 110 mm | 1472.59 | 1471.11 |
| MH2_3 | -87684.01 | 2975304.02 | 1473.30 | 1471.11 | | 2.19 | 2.81 | PVC-U | 110 mm | 1472.59 | 1471.11 |
| MH2_30 | -86719.74 | 2974748.08 | 1484.56 | 1483.20 | 72.96 | 1.36 | 0.84 | PVC-U | 160 mm | 1483.20 | 1482.59 |
| MH2_29 | -86764.80 | 2974805.46 | 1484.29 | 1482.59 | 69.78 | 1.67 | 0.59 | PVC-U | 160 mm | 1482.59 | 1482.18 |
| MH2_28 | -86808.04 | 2974860.23 | 1483.85 | 1482.18 | 58.07 | 1.78 | 0.88 | PVC-U | 160 mm | 1482.18 | 1481.67 |
| MH2_27 | -86844.15 | 2974905.71 | 1483.45 | 1481.67 | 16.84 | 1.90 | 0.99 | PVC-U | 160 mm | 1481.67 | 1481.51 |
| MH2_26 | -86854.75 | 2974918.80 | 1483.40 | 1481.51 | 40.42 | 1.94 | 1.00 | PVC-U | 160 mm | 1481.51 | 1481.10 |
| MH2_25 | -86879.56 | 2974950.70 | 1483.04 | 1481.10 | 18.03 | 1.94 | 0.61 | PVC-U | 160 mm | 1481.10 | 1480.99 |
| MH2_24 | -86890.84 | 2974964.77 | 1482.89 | 1480.99 | 44.42 | 1.84 | 0.83 | PVC-U | 160 mm | 1480.99 | 1480.62 |
| MH2_23 | -86918.37 | 2974999.62 | 1482.46 | 1480.62 | 38.10 | 1.85 | 0.97 | PVC-U | 160 mm | 1480.62 | 1480.26 |
| MH2_22 | -86942.01 | 2975029.50 | 1482.10 | 1480.26 | 21.69 | 1.83 | 0.76 | PVC-U | 160 mm | 1480.26 | 1480.09 |
| MH2_21 | -86961.49 | 2975039.03 | 1481.92 | 1480.09 | 21.81 | 1.78 | 0.84 | PVC-U | 160 mm | 1480.09 | 1479.91 |
| MH2_20 | -86963.63 | 2975060.73 | 1481.69 | 1479.91 | 10.67 | 1.83 | 1.03 | PVC-U | 160 mm | 1479.91 | 1479.80 |
| MH2_19 | -86974.30 | 2975060.28 | 1481.67 | 1479.80 | 40.58 | 1.68 | 0.62 | PVC-U | 160 mm | 1479.80 | 1479.55 |
| MH2_17 | -86994.23 | 2975095.62 | 1481.23 | 1479.55 | 68.64 | 1.79 | 1.08 | PVC-U | 160 mm | 1479.55 | 1478.81 |
| MH2_16 | -87037.30 | 2975149.06 | 1480.59 | 1478.81 | 55.66 | 1.81 | 1.14 | PVC-U | 160 mm | 1478.81 | 1478.17 |
| MH2_15 | -87072.08 | 2975192.51 | 1479.98 | 1478.17 | 64.77 | 1.81 | 1.28 | PVC-U | 160 mm | 1478.17 | 1477.34 |
| MH2_14 | -87112.09 | 2975243.44 | 1479.06 | 1477.34 | | 1.72 | | | | | |



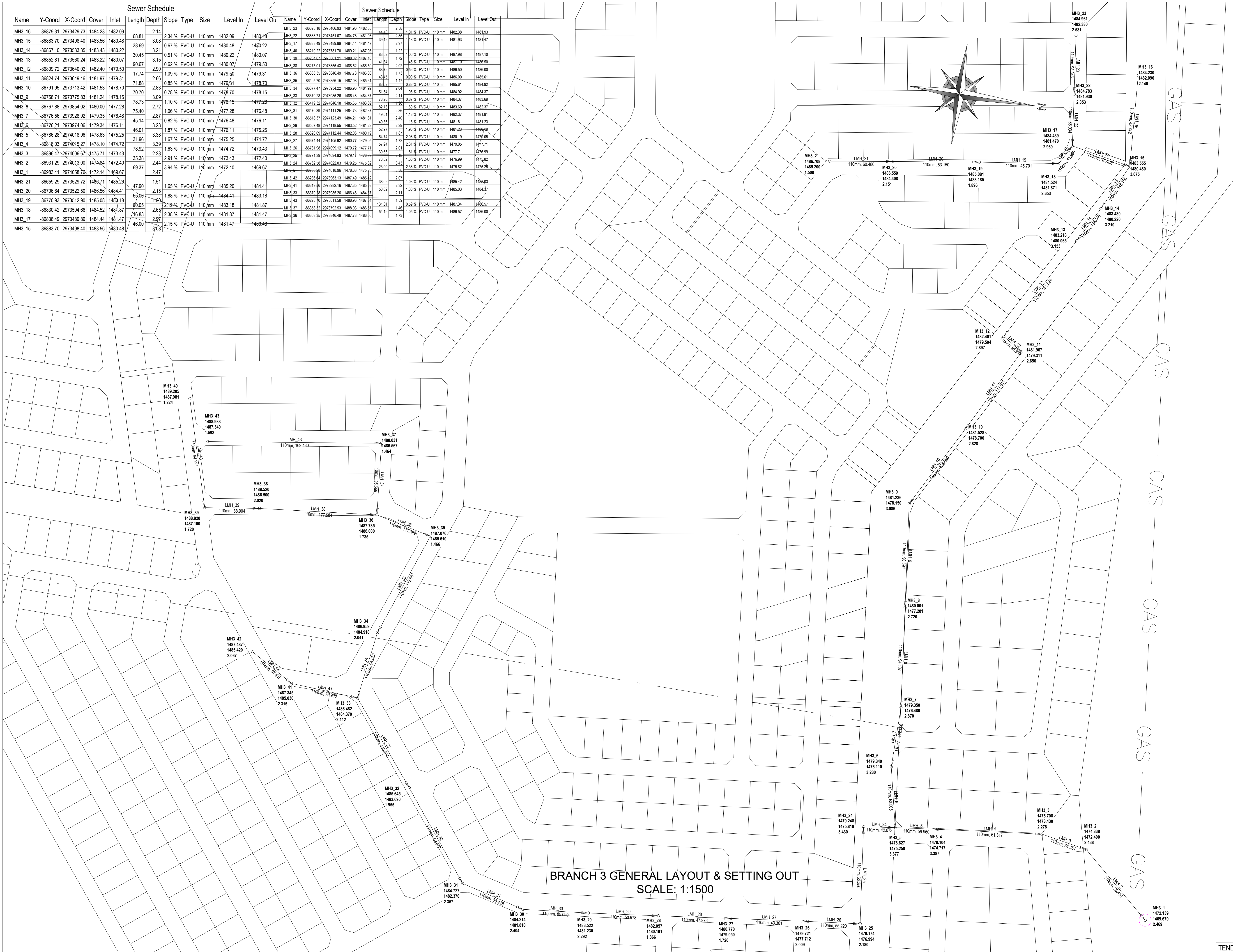
| Sewer Schedule | | | | | | | | | | | |
|----------------|-----------|------------|---------|---------|--------|-------|--------|-------|--------|----------|-----------|
| Name | Y-Coord | X-Coord | Cover | Inlet | Length | Depth | Slope | Type | Size | Level In | Level Out |
| MH2_110 | -87102.53 | 2974787.77 | 1482.29 | 1480.47 | 87.59 | 1.82 | 0.55 % | PVC-U | 110 mm | 1480.47 | 1479.98 |
| MH2_109 | -87155.68 | 2974857.40 | 1481.90 | 1479.98 | 59.69 | 1.92 | 0.51 % | PVC-U | 110 mm | 1479.98 | 1479.68 |
| MH2_108 | -87202.35 | 2974820.18 | 1481.54 | 1479.68 | 59.27 | 1.86 | 0.80 % | PVC-U | 110 mm | 1479.68 | 1479.20 |
| MH2_107 | -87248.85 | 2974783.43 | 1481.01 | 1479.20 | 60.45 | 1.81 | 0.76 % | PVC-U | 110 mm | 1479.20 | 1478.75 |
| MH2_106 | -87295.53 | 2974745.02 | 1480.52 | 1478.75 | 59.68 | 1.77 | 0.80 % | PVC-U | 110 mm | 1478.75 | 1478.27 |
| MH2_105 | -87342.42 | 2974708.11 | 1480.08 | 1478.27 | 58.90 | 1.81 | 0.80 % | PVC-U | 110 mm | 1478.27 | 1477.80 |
| MH2_104 | -87388.54 | 2974671.48 | 1479.62 | 1477.80 | 53.42 | 1.82 | 0.54 % | PVC-U | 110 mm | 1477.80 | 1477.51 |
| MH2_103 | -87430.90 | 2974638.93 | 1479.46 | 1477.51 | 63.63 | 1.95 | 0.77 % | PVC-U | 110 mm | 1477.51 | 1477.02 |
| MH2_102 | -87469.59 | 2974689.45 | 1479.05 | 1477.02 | 44.02 | 2.04 | 0.50 % | PVC-U | 110 mm | 1477.02 | 1476.80 |
| MH2_101 | -87497.04 | 2974723.86 | 1479.00 | 1476.80 | 56.11 | 2.26 | 0.50 % | PVC-U | 110 mm | 1476.80 | 1476.52 |
| MH2_100 | -87530.46 | 2974768.93 | 1478.78 | 1476.52 | 68.92 | 2.48 | 0.52 % | PVC-U | 110 mm | 1476.52 | 1476.16 |
| MH2_96 | -87544.16 | 2974836.47 | 1478.64 | 1476.16 | 47.02 | 2.48 | 0.61 % | PVC-U | 110 mm | 1476.16 | 1475.87 |
| MH2_95 | -87553.48 | 2974882.55 | 1478.35 | 1475.87 | 39.96 | 2.78 | 0.67 % | PVC-U | 110 mm | 1475.87 | 1475.60 |
| MH2_94 | -87559.03 | 2974922.12 | 1478.39 | 1475.60 | 48.41 | 1.77 | 0.76 % | PVC-U | 110 mm | 1475.60 | 1475.23 |
| MH2_93 | -87607.44 | 2974922.27 | 1477.01 | 1475.23 | 28.28 | 2.01 | 0.94 % | PVC-U | 110 mm | 1475.23 | 1474.97 |
| MH2_69 | -87613.60 | 2974949.87 | 1476.98 | 1474.97 | 27.32 | 2.01 | 0.73 % | PVC-U | 110 mm | 1474.97 | 1474.77 |
| MH2_68 | -87608.23 | 2974976.65 | 1476.93 | 1474.77 | 45.70 | 2.10 | 0.97 % | PVC-U | 110 mm | 1474.77 | 1474.32 |
| MH2_67 | -87632.72 | 2975015.24 | 1476.82 | 1474.32 | 40.86 | 2.45 | 1.22 % | PVC-U | 110 mm | 1474.32 | 1473.83 |
| MH2_66 | -87671.47 | 2975028.19 | 1476.28 | 1473.83 | 91.23 | 2.45 | 0.61 % | PVC-U | 110 mm | 1473.83 | 1473.03 |
| MH2_64 | -87757.30 | 2975059.10 | 1475.00 | 1473.03 | 15.21 | 1.96 | 0.26 % | PVC-U | 160 mm | 1473.03 | 1472.99 |
| MH2_63 | -87771.61 | 2975064.26 | 1474.81 | 1472.99 | 44.74 | 1.82 | 0.78 % | PVC-U | 160 mm | 1472.99 | 1472.65 |
| MH2_62 | -87754.12 | 2975105.44 | 1474.72 | 1472.65 | 52.01 | 2.07 | 0.70 % | PVC-U | 160 mm | 1472.65 | 1472.28 |
| MH2_61 | -87736.10 | 2975154.23 | 1474.43 | 1472.28 | 15.86 | 2.09 | 0.97 % | PVC-U | 160 mm | 1472.28 | 1472.13 |
| MH2_60 | -87714.90 | 2975168.99 | 1474.22 | 1472.13 | 39.47 | 1.94 | 0.78 % | PVC-U | 160 mm | 1472.13 | 1471.82 |
| MH2_59 | -87729.31 | 2975206.39 | 1473.76 | 1471.82 | 12.53 | 2.06 | 0.13 % | PVC-U | 160 mm | 1471.82 | 1471.80 |
| MH2_58 | -87717.98 | 2975211.74 | 1473.86 | 1471.80 | 51.31 | 2.06 | 0.75 % | PVC-U | 160 mm | 1471.80 | 1471.42 |
| MH2_57 | -87700.05 | 2975259.81 | 1473.58 | 1471.42 | 47.03 | 2.16 | 0.66 % | PVC-U | 160 mm | 1471.42 | 1471.11 |
| MH2_3 | -87684.01 | 2975304.02 | 1473.30 | 1471.11 | 58.86 | 2.19 | 0.39 % | PVC-U | 160 mm | 1471.11 | 1470.29 |
| MH2_2 | -87665.85 | 2975360.00 | 1472.87 | 1470.29 | 57.85 | 2.58 | 1.13 % | PVC-U | 160 mm | 1471.11 | 1470.29 |
| MH2_1 | -87722.34 | 2975372.45 | 1472.47 | 1469.63 | 2.84 | 2.84 | 1.13 % | PVC-U | 160 mm | 1470.29 | 1469.63 |
| MH2_112 | -87359.65 | 2974777.58 | 1480.02 | 1478.96 | 33.94 | 1.06 | 1.47 % | PVC-U | 110 mm | 1478.96 | 1478.46 |
| MH2_111 | -87385.79 | 2974755.94 | 1479.76 | 1478.46 | 54.37 | 1.31 | 0.85 % | PVC-U | 110 mm | 1478.46 | 1477.99 |
| MH2_99 | -87428.32 | 2974722.07 | 1479.46 | 1477.99 | 47.33 | 1.47 | 0.74 % | PVC-U | 110 mm | 1477.99 | 1477.64 |
| MH2_98 | -87457.63 | 2974759.23 | 1479.28 | 1477.64 | 103.34 | 1.64 | 0.81 % | PVC-U | 110 mm | 1477.64 | 1476.81 |
| MH2_97 | -87521.80 | 2974840.23 | 1478.94 | 1476.81 | 22.67 | 2.13 | 2.87 % | PVC-U | 110 mm | 1476.81 | 1476.16 |
| MH2_96 | -87544.16 | 2974836.47 | 1478.64 | 1476.16 | 2.48 | 2.48 | 0.61 % | PVC-U | 110 mm | 1476.16 | 1475.87 |
| MH2_113 | -87792.88 | 2974944.69 | 1475.50 | 1474.42 | 17.55 | 1.07 | 1.06 % | PVC-U | 110 mm | 1474.42 | 1474.24 |
| MH2_65 | -87788.30 | 2974961.63 | 1475.38 | 1474.24 | 1.14 | 1.14 | 1.18 % | PVC-U | 110 mm | 1474.24 | 1473.03 |
| MH2_64 | -87757.30 | 2975059.10 | 1475.00 | 1473.03 | 102.28 | 1.96 | 0.45 % | PVC-U | 110 mm | 1473.03 | 1472.59 |
| MH2_116 | -87408.75 | 2975262.05 | 1476.58 | 1475.15 | 1.43 | 1.43 | 0.45 % | PVC-U | 110 mm | 1475.15 | 1474.53 |

| Sewer Schedule | | | | | | | | | | | |
|----------------|-----------|------------|---------|---------|--------|-------|-------|-------|--------|----------|-----------|
| Name | Y-Coord | X-Coord | Cover | Inlet | Length | Depth | Slope | Type | Size | Level In | Level Out |
| MH2_79 | -87312.97 | 2974814.78 | 1480.50 | 1479.36 | 21.01 | 1.14 | 2.60 | PVC-U | 110 mm | 1479.36 | 1478.81 |
| MH2_78 | -87329.36 | 2974801.63 | 1480.34 | 1478.81 | 51.08 | 1.53 | 1.35 | PVC-U | 110 mm | 1478.81 | 1478.12 |
| MH2_77 | -87361.70 | 2974841.16 | 1480.12 | 1478.12 | 60.40 | 2.00 | 1.07 | PVC-U | 110 mm | 1478.12 | 1477.47 |
| MH2_76 | -87398.89 | 2974888.75 | 1479.79 | 1477.47 | 61.01 | 2.32 | 0.63 | PVC-U | 110 mm | 1477.47 | 1477.09 |
| MH2_75 | -87436.66 | 2974936.67 | 1479.58 | 1477.09 | 61.59 | 2.59 | 0.91 | PVC-U | 110 mm | 1477.09 | 1476.53 |
| MH2_74 | -87474.83 | 2974985.00 | 1479.09 | 1476.53 | 53.52 | 2.56 | 1.17 | PVC-U | 110 mm | 1476.53 | 1475.90 |
| MH2_72 | -87506.76 | 2975027.95 | 1478.20 | 1475.90 | 44.31 | 2.29 | 1.09 | PVC-U | 110 mm | 1475.90 | 1475.42 |
| MH2_71 | -87543.66 | 2975003.42 | 1477.74 | 1475.42 | 55.46 | 2.32 | 0.87 | PVC-U | 110 mm | 1475.42 | 1474.94 |
| MH2_70 | -87589.77 | 2974972.58 | 1477.45 | 1474.94 | 18.91 | 2.51 | 0.91 | PVC-U | 110 mm | 1474.94 | 1474.77 |
| MH2_68 | -87608.23 | 2974976.65 | 1476.93 | 1474.77 | | 2.16 | | | | | |
| MH2_92 | -87063.71 | 2974555.80 | 1481.36 | 1480.98 | | 0.39 | | | | | |
| MH2_91 | -87054.55 | 2974584.75 | 1481.82 | 1480.95 | 30.37 | 0.87 | 0.07 | PVC-U | 110 mm | 1480.98 | 1480.95 |
| MH2_90 | -87061.94 | 2974657.36 | 1482.33 | 1480.85 | 72.99 | 1.47 | 0.14 | PVC-U | 110 mm | 1480.95 | 1480.85 |
| MH2_89 | -87069.61 | 2974730.13 | 1482.54 | 1480.48 | 73.17 | 2.06 | 0.51 | PVC-U | 110 mm | 1480.85 | 1480.48 |
| MH2_88 | -87087.53 | 2974868.02 | 1482.48 | 1480.08 | 139.04 | 2.06 | 0.29 | PVC-U | 110 mm | 1480.48 | 1480.08 |
| MH2_87 | -87116.47 | 2974904.32 | 1481.85 | 1479.91 | 46.42 | 1.94 | 0.37 | PVC-U | 110 mm | 1480.08 | 1479.91 |
| MH2_86 | -87148.42 | 2974944.03 | 1481.65 | 1479.56 | 50.97 | 2.09 | 0.69 | PVC-U | 110 mm | 1479.91 | 1479.56 |
| MH2_85 | -87203.84 | 2975014.96 | 1480.90 | 1478.50 | 90.01 | 2.40 | 1.18 | PVC-U | 110 mm | 1479.56 | 1478.50 |
| MH2_84 | -87229.09 | 2975045.72 | 1480.57 | 1478.05 | 39.80 | 2.52 | 1.13 | PVC-U | 110 mm | 1478.50 | 1478.05 |
| MH2_83 | -87269.43 | 2975096.05 | 1479.93 | 1477.45 | 64.50 | 2.48 | 0.93 | PVC-U | 110 mm | 1478.05 | 1477.45 |
| MH2_82 | -87284.44 | 2975101.76 | 1479.73 | 1477.29 | 16.07 | 2.44 | 1.02 | PVC-U | 110 mm | 1477.45 | 1477.29 |
| MH2_81 | -87340.83 | 2975099.74 | 1479.42 | 1476.92 | 56.42 | 2.50 | 0.65 | PVC-U | 110 mm | 1477.29 | 1476.92 |
| MH2_80 | -87383.84 | 2975097.25 | 1479.14 | 1476.60 | 43.08 | 2.54 | 0.74 | PVC-U | 110 mm | 1476.92 | 1476.60 |
| MH2_73 | -87408.59 | 2975098.25 | 1478.98 | 1476.45 | 24.78 | 2.52 | 0.60 | PVC-U | 110 mm | 1476.60 | 1476.45 |
| MH2_72 | -87506.76 | 2975027.95 | 1478.20 | 1475.90 | 120.74 | 2.29 | 0.45 | PVC-U | 110 mm | 1476.45 | 1475.90 |

BRANCH 2 GENERAL LAYOUT AND SETTING OUT
SCALE: 1:1500

TENDER

| Sewer Schedule | | | | | | | | | | | |
|----------------|-----------|------------|---------|---------|--------|-------|--------|-------|--------|----------|-----------|
| Name | Y-Coord | X-Coord | Cover | Inlet | Length | Depth | Slope | Type | Size | Level In | Level Out |
| MH2_13 | -87144.78 | 2975284.90 | 1478.21 | 1476.54 | 52.80 | 1.67 | 1.52 % | PVC-U | 160 mm | 1477.34 | 1476.54 |
| MH2_12 | -87178.48 | 2975327.06 | 1477.38 | 1475.76 | 53.98 | 1.61 | 1.44 % | PVC-U | 160 mm | 1476.54 | 1475.76 |
| MH2_11 | -87212.12 | 2975358.58 | 1476.44 | 1474.91 | 53.43 | 1.53 | 1.69 % | PVC-U | 160 mm | 1475.76 | 1474.91 |
| MH2_10 | -87261.35 | 2975367.30 | 1476.14 | 1474.57 | 49.25 | 1.51 | 0.68 % | PVC-U | 160 mm | 1474.91 | 1474.57 |
| MH2_9 | -87333.32 | 2975369.37 | 1475.76 | 1473.87 | 71.98 | 1.87 | 0.98 % | PVC-U | 160 mm | 1474.57 | 1473.87 |
| MH2_8 | -87362.60 | 2975364.80 | 1474.86 | 1473.08 | 49.29 | 1.61 | 0.98 % | PVC-U | 160 mm | 1473.87 | 1473.08 |
| MH2_7 | -87447.08 | 2975363.93 | 1474.37 | 1472.53 | 64.50 | 1.75 | 0.84 % | PVC-U | 160 mm | 1473.08 | 1472.53 |
| MH2_6 | -87520.72 | 2975361.55 | 1473.85 | 1471.91 | 73.79 | 2.14 | 0.95 % | PVC-U | 160 mm | 1471.91 | 1471.21 |
| MH2_5 | -87594.48 | 2975360.11 | 1473.35 | 1471.21 | 71.36 | 2.58 | 1.29 % | PVC-U | 160 mm | 1471.21 | 1470.29 |
| MH2_4 | -87665.85 | 2975360.00 | 1472.87 | 1470.29 | | | | | | | |
| MH2_32 | -87070.68 | 2975130.13 | 1480.79 | 1479.19 | 19.18 | 1.60 | 0.63 % | PVC-U | 110 mm | 1479.19 | 1479.07 |
| MH2_31 | -87052.27 | 2975135.52 | 1480.76 | 1479.07 | 20.18 | 1.69 | 1.31 % | PVC-U | 110 mm | 1479.07 | 1478.81 |
| MH2_16 | -87037.30 | 2975149.06 | 1480.59 | 1478.81 | | 1.27 | | | | | |
| MH2_35 | -86996.74 | 2975028.48 | 1482.06 | 1480.79 | 38.76 | 1.33 | 0.73 % | PVC-U | 110 mm | 1480.79 | 1480.58 |
| MH2_34 | -87035.10 | 2975022.98 | 1481.96 | 1480.58 | 60.32 | 1.37 | 0.57 % | PVC-U | 110 mm | 1480.58 | 1480.12 |
| MH2_33 | -87041.30 | 2975082.98 | 1481.35 | 1480.12 | 42.27 | 1.24 | 0.65 % | PVC-U | 110 mm | 1480.12 | 1479.84 |
| MH2_18 | -86999.37 | 2975088.34 | 1481.28 | 1479.84 | 8.91 | 1.46 | 3.32 % | PVC-U | 160 mm | 1479.84 | 1479.55 |
| MH2_17 | -86994.23 | 2975095.62 | 1481.23 | 1479.55 | | | | | | | |
| MH2_37 | -86958.09 | 2974988.16 | 1482.60 | 1481.76 | 77.15 | 1.08 | 0.53 % | PVC-U | 110 mm | 1481.76 | 1481.35 |
| MH2_36 | -87033.01 | 2974969.75 | 1482.45 | 1481.35 | 53.27 | 1.19 | 1.43 % | PVC-U | 110 mm | 1481.35 | 1480.58 |
| MH2_34 | -87035.10 | 2975022.98 | 1481.96 | 1480.58 | | 1.38 | | | | | |
| MH2_44 | -86874.11 | 2974820.20 | 1483.33 | 1482.81 | 19.23 | 0.50 | 0.98 % | PVC-U | 110 mm | 1482.81 | 1482.62 |
| MH2_43 | -86890.92 | 2974882.88 | 1483.16 | 1482.62 | 70.53 | 0.54 | 0.46 % | PVC-U | 110 mm | 1482.62 | 1482.29 |
| MH2_42 | -86961.03 | 2974875.23 | 1482.99 | 1482.29 | | 0.70 | | | | | |



| Sewer Schedule | | | | | | | | | | | | Sewer Schedule | | | | | | | | | | | |
|----------------|-----------|------------|---------|---------|--------|-------|--------|-------|--------|----------|-----------|----------------|-----------|------------|---------|---------|--------|-------|--------|-------|--------|----------|-----------|
| Name | Y-Coord | X-Coord | Cover | Inlet | Length | Depth | Slope | Type | Size | Level In | Level Out | Name | Y-Coord | X-Coord | Cover | Inlet | Length | Depth | Slope | Type | Size | Level In | Level Out |
| MH3_16 | -86879.31 | 2973429.73 | 1484.23 | 1482.09 | 68.81 | 2.14 | 2.34 % | PVC-U | 110 mm | 1482.09 | 1480.48 | MH3_23 | -86828.18 | 2973406.93 | 1484.96 | 1482.38 | 44.48 | 2.58 | 1.01 % | PVC-U | 110 mm | 1482.38 | 1481.93 |
| MH3_15 | -86883.70 | 2973498.40 | 1483.56 | 1480.48 | 38.69 | 3.21 | 0.67 % | PVC-U | 110 mm | 1480.48 | 1480.22 | MH3_17 | -86838.49 | 2973489.89 | 1484.44 | 1481.47 | 39.12 | 2.97 | 1.18 % | PVC-U | 110 mm | 1481.47 | 1481.47 |
| MH3_14 | -86867.10 | 2973533.35 | 1483.43 | 1480.22 | 30.45 | 3.15 | 0.51 % | PVC-U | 110 mm | 1480.22 | 1480.07 | MH3_40 | -86210.22 | 2973781.70 | 1489.21 | 1487.98 | 83.02 | 1.22 | 1.06 % | PVC-U | 110 mm | 1487.98 | 1487.10 |
| MH3_13 | -86852.81 | 2973560.24 | 1483.22 | 1480.07 | 90.67 | 2.90 | 0.62 % | PVC-U | 110 mm | 1480.07 | 1479.50 | MH3_39 | -86234.01 | 2973861.21 | 1488.82 | 1487.10 | 41.54 | 1.72 | 1.05 % | PVC-U | 110 mm | 1487.10 | 1486.59 |
| MH3_12 | -86809.72 | 2973640.02 | 1482.40 | 1479.50 | 17.74 | 2.66 | 1.09 % | PVC-U | 110 mm | 1479.50 | 1479.31 | MH3_38 | -86275.01 | 2973855.43 | 1488.52 | 1486.50 | 88.79 | 2.02 | 0.98 % | PVC-U | 110 mm | 1486.50 | 1486.00 |
| MH3_11 | -86824.74 | 2973649.46 | 1481.97 | 1479.31 | 71.88 | 2.83 | 0.78 % | PVC-U | 110 mm | 1479.31 | 1478.70 | MH3_36 | -86363.35 | 2973846.49 | 1487.73 | 1486.00 | 43.65 | 1.47 | 0.93 % | PVC-U | 110 mm | 1486.00 | 1485.61 |
| MH3_10 | -86791.95 | 2973713.42 | 1481.53 | 1478.70 | 70.70 | 3.09 | 1.10 % | PVC-U | 110 mm | 1478.70 | 1478.15 | MH3_35 | -86405.70 | 2973846.49 | 1487.08 | 1485.61 | 83.02 | 1.47 | 0.93 % | PVC-U | 110 mm | 1485.61 | 1484.92 |
| MH3_9 | -86758.71 | 2973775.83 | 1481.24 | 1478.15 | 78.73 | 2.72 | 1.10 % | PVC-U | 110 mm | 1478.15 | 1477.28 | MH3_34 | -86377.47 | 2973934.22 | 1486.96 | 1484.92 | 51.54 | 2.04 | 1.06 % | PVC-U | 110 mm | 1484.92 | 1484.37 |
| MH3_8 | -86767.88 | 2973854.02 | 1480.00 | 1477.28 | 75.40 | 2.87 | 1.06 % | PVC-U | 110 mm | 1477.28 | 1476.48 | MH3_33 | -86370.28 | 2973985.26 | 1486.48 | 1484.37 | 78.20 | 2.11 | 0.87 % | PVC-U | 110 mm | 1484.37 | 1483.69 |
| MH3_7 | -86776.56 | 2973928.92 | 1479.35 | 1476.48 | 45.14 | 3.23 | 1.87 % | PVC-U | 110 mm | 1476.48 | 1475.25 | MH3_32 | -86419.32 | 2974046.18 | 1485.69 | 1483.69 | 82.73 | 1.96 | 1.60 % | PVC-U | 110 mm | 1483.69 | 1482.37 |
| MH3_6 | -86776.21 | 2973974.06 | 1479.34 | 1476.11 | 46.01 | 3.39 | 1.67 % | PVC-U | 110 mm | 1476.11 | 1475.25 | MH3_31 | -86470.39 | 2974111.25 | 1484.73 | 1482.37 | 49.51 | 2.36 | 1.13 % | PVC-U | 110 mm | 1482.37 | 1481.81 |
| MH3_5 | -86786.28 | 2974018.96 | 1478.63 | 1475.25 | 31.96 | 3.39 | 1.67 % | PVC-U | 110 mm | 1475.25 | 1474.72 | MH3_30 | -86518.37 | 2974123.49 | 1484.21 | 1481.81 | 49.36 | 2.40 | 1.18 % | PVC-U | 110 mm | 1481.81 | 1481.23 |
| MH3_4 | -86818.03 | 2974015.27 | 1478.10 | 1474.72 | 78.92 | 2.28 | 2.91 % | PVC-U | 110 mm | 1474.72 | 1473.43 | MH3_29 | -86567.48 | 2974118.55 | 1483.52 | 1481.23 | 59.97 | 2.29 | 1.96 % | PVC-U | 110 mm | 1481.23 | 1480.49 |
| MH3_3 | -86896.47 | 2974006.67 | 1475.71 | 1473.43 | 35.38 | 2.44 | 3.94 % | PVC-U | 110 mm | 1473.43 | 1472.40 | MH3_28 | -86620.09 | 2974112.44 | 1482.08 | 1480.19 | 54.74 | 1.87 | 2.08 % | PVC-U | 110 mm | 1480.19 | 1479.05 |
| MH3_2 | -86931.29 | 2974813.00 | 1474.84 | 1472.40 | 69.37 | 2.47 | 1.51 % | PVC-U | 110 mm | 1472.40 | 1469.67 | MH3_27 | -86674.44 | 2974105.92 | 1480.77 | 1479.05 | 57.94 | 1.72 | 2.31 % | PVC-U | 110 mm | 1479.05 | 1477.71 |
| MH3_1 | -86983.41 | 2974058.76 | 1472.14 | 1469.67 | 47.90 | 2.15 | 1.65 % | PVC-U | 110 mm | 1469.67 | 1468.41 | MH3_26 | -86731.98 | 2974059.12 | 1479.72 | 1477.71 | 39.65 | 2.18 | 1.81 % | PVC-U | 110 mm | 1477.71 | 1476.99 |
| MH3_21 | -86659.29 | 2973529.72 | 1486.71 | 1485.20 | 63.06 | 1.90 | 2.19 % | PVC-U | 110 mm | 1485.20 | 1484.41 | MH3_25 | -86771.39 | 2974094.89 | 1479.17 | 1476.99 | 73.32 | 3.43 | 1.60 % | PVC-U | 110 mm | 1476.99 | 1475.82 |
| MH3_20 | -86706.64 | 2973522.50 | 1486.56 | 1484.41 | 63.06 | 1.90 | 2.19 % | PVC-U | 110 mm | 1484.41 | 1483.18 | MH3_24 | -86762.58 | 2974022.03 | 1479.25 | 1475.82 | 23.90 | 3.38 | 2.38 % | PVC-U | 110 mm | 1475.82 | 1475.28 |
| MH3_19 | -86770.93 | 2973512.90 | 1485.08 | 1483.18 | 60.05 | 2.69 | 2.38 % | PVC-U | 110 mm | 1483.18 | 1481.87 | MH3_42 | -86286.64 | 2973963.13 | 1487.49 | 1485.42 | 38.02 | 2.07 | 1.03 % | PVC-U | 110 mm | 1485.42 | 1485.03 |
| MH3_18 | -86830.42 | 2973504.66 | 1484.52 | 1481.87 | 16.83 | 2.97 | 2.15 % | PVC-U | 110 mm | 1481.87 | 1481.47 | MH3_41 | -86319.56 | 2973982.16 | 1487.35 | 1485.03 | 50.82 | 2.32 | 1.30 % | PVC-U | 110 mm | 1485.03 | 1484.37 |
| MH3_17 | -86838.49 | 2973489.89 | 1484.44 | 1481.47 | 46.00 | 3.08 | 2.15 % | PVC-U | 110 mm | 1481.47 | 1480.48 | MH3_39 | -86370.28 | 2973985.26 | 1486.48 | 1484.37 | 50.82 | 2.11 | 1.30 % | PVC-U | 110 mm | 1484.37 | 1483.69 |
| MH3_15 | -86883.70 | 2973498.40 | 1483.56 | 1480.48 | 46.00 | 3.08 | 2.15 % | PVC-U | 110 mm | 1480.48 | 1480.00 | MH3_38 | -86363.35 | 2973984.49 | 1487.73 | 1486.00 | 54.19 | 1.73 | 1.46 % | PVC-U | 110 mm | 1486.00 | 1485.67 |

NOTES :

1. LH = LAMPHOLE

2. MAX. 3 DWELLING UNITS ON NEW SEWER LINE

REV

BY

DATE

DESCRIPTION

DESIGNED

I. BOGOSH

NOVEMBER 2023

CHECKED

C. BOKWO

NOVEMBER 2023

DRAWN

B. MNGOMEDZU

NOVEMBER 2023

CHECKED

C. BOKWO

NOVEMBER 2023

CLIENT:

Metsimahalo Municipality

APPROVED: CLIENT

DATE

ARCHITECT:

leko

Engineering Consultants

APPROVED: PRINCIPAL AGENT

DATE

CIVIL & STRUCTURAL ENGINEERS:

leko

Engineering Consultants

CONTACT DETAILS

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011 551 0031

CELL

081 480 7944

EMAIL

info@leko.co.za

WEB

www.leko.co.za

MOB

082 799 9123

APPROVED: ENGINEER

DATE

PROJECT TITLE

APPOINTMENT OF A CONTRACTOR FOR THE CONSTRUCTION OF 2000 TOILETS AND SEWER NETWORK REPAIR IN GORTIN PHASE 1

DRAWING TITLE

GENERAL LAYOUT & SETTING OUT

FILE No

SCALE

SHEET

DRAWING No

AS SHOWN

A1

TENDER

7515-S3-01

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