



Documents may be obtained,
free of charge, in electronic format,
from the eTenders website.

Reference is to be made to
Clause F.1.2 of the
Tender Data.

HUMAN SETTLEMENTS UNIT
HOUSING ENGINEERING DEPARTMENT

PROCUREMENT DOCUMENT
INFRASTRUCTURE

CONTRACT No.: 1H-48296

TITLE: Construction of Civil Infrastructure for Umlazi Zone 2

Clarification Meeting: There will be no clarification meeting

Issued by:

HUMAN SETTLEMENTS UNIT
HOUSING ENGINEERING DEPARTMENT

Date of Issue: September 2022

Document Version: 02/03/2022

NAME OF TENDERER:

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PART T1: TENDERING PROCEDURES
T1.1: TENDER NOTICE AND INVITATION TO TENDER

Tenders are hereby invited for the construction of civil infrastructure for various sites in Umlazi Zone 2. The scope of work includes the construction of Roads, Footpaths, Water, Sewer and Stormwater infrastructure, Protection Works etc.

(F.1.1.1) The Employer is the eThekweni Municipality as represented by Deputy Head: Housing Engineering

It is estimated that tenderers should have a CIDB contractor grading designation of 7 CE (or higher).

(F.1.2) Documents can be obtained in electronic format, issued by the eThekweni Municipality:

- Electronically downloaded documentation is obtainable from the National Treasury's eTenders website or the eThekweni Municipality's Website. The entire document should be printed and suitably bound by the tenderer.

(F.2.7) There will be no clarification meeting, bidders are requested to email all queries related to the bid to Lungi.Nzuza@durban.gov.za. All email queries are to be submitted by 2022-12-02. The emailed questions and answers will be consolidated and posted on eTenders/Municipal website for the benefit of all tenderers by 2022-12-08.

(F.2.8) Queries relating to these documents may be addressed to the Employer's Agent's Representative whose contact details are: Lungi Nzuza , 031 311 3280 (t) , Lungi.Nzuza@durban.gov.za

(F.2.13) Tender offers shall be delivered to the Municipal Building, 166 K.E. Masinga Road and placed in the tender box located in the ground floor foyer.

(F.2.15) Tender offers shall be delivered on or before Friday, 15 December 2022 at or before 11:00

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

PART T1: TENDERING PROCEDURES**T1.2: TENDER DATA****T1.2.1 STANDARD CONDITIONS OF TENDER**

The conditions of tender are the Standard Conditions of Tender as contained in Annex F of the CIDB Standard for Uniformity in Construction Procurement (July 2015) as published in Government Gazette No 38960, Board Notice 136 of 2015 of 10 July 2015.

The Standard Conditions of Tender make several references to the Tender Data for details that apply specifically to this tender. The Tender Data shall have precedence in the interpretation of any ambiguity or inconsistency between it and the Standard Conditions of Tender.

T1.2.2 TENDER DATA

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

F.1: GENERAL

F.1.1 The employer: The Employer for this Contract is the eThekweni Municipality as represented by: Deputy Head: Housing Engineering

F.1.2 Tender documents: The Tender Documents issued by the Employer comprise:

- 1) This procurement document.
- 2) Drawings, issued separately from this document (or alternately: Bound in Section C3.4 as an Annexure).
- 3) "General Conditions of Contract for Construction Works – 3rd Edition 2015" issued by the South African Institution of Civil Engineering (GCC 2015). This document is obtainable separately, and Tenderers shall obtain their own copies.
- 4) "City of Durban Technical Specifications" hereinafter referred to as the Standard Engineering Specifications. This document is obtainable separately, and Tenderers shall obtain their own copies of the applicable Sections.
- 5) In addition, Tenderers are advised, in their own interest, to obtain their own copies of the following acts, regulations, and standards referred to in this document as they are essential for the Tenderer to get acquainted with the basics of construction management, the implementation of preferential construction procurement policies, and the participation of targeted enterprise and labour.
 - The Occupational Health and Safety Act No 85 and Amendment Act No 181 of 1993, and the Construction Regulations (2014).
 - The Construction Industry Development Board Act No 38 of 2000 and the Regulations issued in terms of the Act (July 2013).
 - The Preferential Procurement Policy Framework Act No 5 of 2000.
 - SANS 1921:2004 – Construction and Management Requirements for Works Contract, Parts 1-3.
 - The Employer's current Supply Chain Management Policy.
 - Any other eThekweni Policy documents referenced in the Tender Documents.

Electronically downloaded documentation is obtainable from the National Treasury's **eTenders Website** <https://etenders.treasury.gov.za/>

The entire downloaded document should be printed and suitably bound by the tenderer.

F.1.4 The employer's agent: The Employer's agent is

- Ashley Roopnarian
- Tel: 031 311 6487 (t)
- Email: Ashley.Roopnarian@durban.gov.za

The tenderer's contact details as indicated in the Contract Data under Clause C1.2.2.2 "Data to Be Provided by Contractor" shall be deemed as the only applicable contact details for the tenderer for use in communications between the employer's agent and the tenderer after the closing time stated in the Tender Data.

F.1.6 Procurement procedures: The competitive negotiation procedure shall be applied.**F.2: TENDERER'S OBLIGATIONS****F.2.1 Eligibility: General**

A Tenderer will not be eligible to submit a tender if:

- (a) the Tenderer does not comply with the legal requirements as stated in the Employer's current SCM Policy;
- (b) the Tenderer cannot provide proof that he is in good standing with respect to duties, taxes, levies and contributions required in terms of legislation applicable to the work in the contract.
- (c) In the event of a Compulsory Clarification Meeting:
 - i) the Tenderer fails to attend the Compulsory Clarification Meeting.
 - ii) the Tenderer fails to have form "Certificate of Attendance at Clarification Meeting / Site Inspection" (in Part T2.2) signed by the Employer's Agent or his representative.
- (d) in the case of JV submissions, two or more JV entities have common directors / shareholders or common entities tendering for the same works.
- (e) at the time of closing of tenders, the Tenderer is not registered on the National Treasury Central Supplier Database (CSD) as a service provider. In the case of a Joint Venture, this requirement will apply individually to each party in the Joint Venture.

F.2.1.1 Eligibility: CIDB

Only those tenderers who are registered (as "Active") with the CIDB (at time of tender closing), in a contractor grading designation equal to or higher than a contractor grading designation determined in accordance with the sum tendered, or a value determined in accordance with Regulation 25 (1B) or 25(7A) of the Construction Industry Development Regulations, for a CE class of construction work, are eligible to have their tenders evaluated.

Joint ventures are eligible to submit tenders provided that:

- (a) Every member of the joint venture is registered (as "Active") with the CIDB (at time of tender closing).
- (b) The lead partner has a contractor grading designation in the CE class of construction work and has a grading designation of not lower than one level below the required grading designation: and
- (c) The combined contractor grading designation calculated in accordance with the Construction Industry Development Regulations (2013) is equal to or higher than a contractor grading designation determined in accordance with the sum tendered for a CE class of construction work or a value determined in accordance with Regulation 25 (1B) or 25(7A) of the

Construction Industry Development Regulations.

F.2.1.2 Eligibility: Tenderer's Experience

Only those tenderers that can demonstrate experience, by the submission of the specified returnable document in Part T2.2 (duplicated for each experience submission), and supply the associated documentation/ information, in works of a similar nature, within the past 7 years, will be eligible to have their tenders evaluated in terms of Clause F.3.11.

The documentation/ information that is required is specified on **Table 1: "Documentation / Information Requirements"** (which includes the Notes below the table), and the experience requirement is as

In the event of a Joint Venture (JV) tendering for this contract, experience gained by the separate entities making up the JV may be used as experience provided that the experience requirement, as stipulated in **Table 2**, is satisfied, and that the required documentation/ information is provided.

Returnable form "Experience of Tenderer" is included in Part T2. This form is to be duplicated for each experience submission, as may be required.

Table 1: Documentation / Information Requirements

Note: an “X” in this table indicates that the associated documentation must be provided, if applicable.	Proof of Sub-Contract Agreement	Letter of Award OR Form of Offer & Acceptance	Most recent Payment Certificate with Quantities summary	Final Payment Certificate with Quantities summary	Completion Certificate	NB Scope of Work
	Note 1	Note 2	Note 3	Note 4	Note 5	Note 6
Works as Main Contractor						
Completed Contracts		X		X	X	X
<u>NOTES</u>						
Note 1	Must include the names of the parties, the managing entity's name, the effective dates, and the signature(s) page, all pertaining to the agreement.					
Note 2	Issued by the Client / Employer.					
Note 3	Proof of the practical completion certificate received from the Main Contractor or Client/ Employer.					
Note 4	Issued by the Client/ Employer.					
Note 5	NB: Without this information the experience submission cannot be considered. - This submission must indicate how the works carried out, either as a Sub-Contractor or a Main Contractor, is similar (see Table 2: Tenderer's Experience Requirement) to the Scope-of-Work of this specific tender. - If executed as a Sub-Contractor, the Scope-of-Work should be indicative of only the works carried out by the Sub-Contractor, and not the overall Scope-of-Work of the main contract. - If executed as a Main Contractor, the overall contract Scope-of-Work is to be provided. - The description of the Scope-of-Work is to be inserted into the returnable form in Part T2, or if available as a hard copy (max. 2 pages) attached to the form with the other relevant, associated, supporting documentation.					
Failure to submit the returnable form in Part T2.2, and provide the above supporting documentation/ information, for each submission of experience, will invalidate that experience submission						

Table 2: Tenderer's Experience Requirement**Civil Engineering Services Works**

- Projects of a similar nature that will be considered will be one, or a combination of, the following types of projects: new road construction, access road, earthworks, sewer reticulation, stormwater reticulation and protection works (Dry stack retaining walls, Gabion retaining wall ect) where the value is 60% or above the lower limit of 8CE CIDB Grading value as indicated in this Clause, F .2.1.2
- **NOTE:** The tenderer must have undertaken and successfully completed **a minimum of 4 projects** within the past **10 years as the Main Contractor**.to meet the eligibility experience requirements.

Eligibility: Tenderers Key Personnel

Only those tenderers who can demonstrate having the human resources, by the submission of the specified documentation / information, will be eligible to have their tenders evaluated in terms of Clause F.3.11.

Returnable form "Experience of Key Personnel" is included in part T2 should be duplicated for each experience submission, as may be required.

- a) Contracts Manager.
 1. Has a minimum of eight (8) years relevant construction related experience, with three years of the experience being post registration.
 2. Is registered with ECSA as Pr. Eng or Pr.Tech. Eng.
- b) Site agent:
 1. Must be full time on site for the duration of the contract.
 2. Has a minimum of five (5) years relevant construction related experience.
 3. Is registered with SACPCMP as a Pr. CMP or with ECSA as Pr. Tech Eng.
 4. Has a degree or Diploma.
- c) Site Foreman;
 1. Must be full time on site for the duration of the contract.
 2. Has a minimum of five (5) years construction of township services and infrastructure experience.
 3. Minimum NQF Level 3

Note: The failure to complete the relevant returnable form in Part T2.2 for each submission of experience AND supply the associated documentation (as specified on Table 1), will invalidate the experience submission.

F.2.2.2 The cost of the tender documents: Replace this paragraph with the following:

"Documents may be obtained, free of charge, in electronic format, from the National Treasury's eTenders website or the eThekweni Municipality's Website The entire electronically downloaded document should be printed and suitably bound by the tenderer.

F.2.6 Acknowledge addenda: Add the following paragraphs to the clause:

"Addenda will be published, in electronic format, on the National Treasury's eTenders website (see F.2.2.2 above). Tenderers are to ensure that the eTenders website is consulted for any published addenda pertaining to this tender until three days before the tender closing time as stated in the Tender Data."

"Acknowledgement of receipt of the addenda will be by the return of the relevant completed, dated and signed portion of the addenda, to the address / fax number / email address as specified on the addenda. Failure of the tenderer to comply with the requirements of the addenda may result in the tender submission being made non-responsive."

F.2.7 Clarification meeting: There will be no clarification meeting, bidders are requested to email all queries related to the bid to Lungi.Nzuza@durban.gov.za. All email queries are to be submitted by 2022-12-02. The emailed questions and answers will be consolidated and posted on eTenders/Municipal website for the benefit of all tenderers by 2022-12-08.

In the event of a Compulsory Clarification Meeting, Tenderers must sign the attendance register in the name of the tendering entity. Addenda will be issued to, and tenders will be received only from, those tendering entities appearing on the attendance list.

F.2.12 Alternative tender offers: No alternative tender offers will be considered.

F.2.13 Submitting a tender offer: Submissions must be submitted on official submission documentation issued (either in hard copy or in electronic format) by the eThekweni Municipality.

Identification details to be shown on each tender offer package are:

- Contract No. : 1H-48296
- Contract Title : Construction of Civil Infrastructure for Umlazi Zone 2

The Employer's address for delivery of tender offers is:
the Municipal Building, 166 K.E. Masinga Road
and placed in the **Tender Box** located in the ground floor foyer.

Telephonic, telegraphic, telex, facsimile or e-mailed tender offers will not be accepted.

F.2.15 Closing time: The closing time for delivery of tender offers is:

- Date : Friday, 15 December 2022
- Time : 11:00

F.2.16 Tender offer validity: The Tender Offer validity period is 12 weeks (84 Days) from the closing time for submission of tenders.

F.2.23 Certificates: Refer to **Part T2.1** for a listing of certificates that must be provided with the tender. All certificates must be valid at the time of tender closing.

CIDB Registration

Tenderers are to include with their submission a printout of their registration with the CIDB, obtained from the CIDB website (<https://registers.cidb.org.za/PublicContractors/ContractorSearch>).

The Joint Venture Grading Designation Calculator should be used when submitting as a Joint Venture (<https://registers.cidb.org.za/PublicContractors/JVGradingDesignationCalc>).

The date of obtaining the above printouts is to be indicated on the printout. Registration with the CIDB must be reflected as "Active" at time of tender closing.

Tax Clearance

SARS has introduced a new Tax Compliance Status System. Tenderers can submit a Tax Compliance Status PIN (TCS PIN) instead of an original Tax Clearance Certificate. This TCS PIN can be used by third parties to certify the taxpayer's real-time compliance status.

Separate Tax Clearance Certificates / TCS PINs are required for each entity in a Joint Venture.

B-BBEE Status Level of Contribution

The Amended Construction Sector Code (Government Gazette No.41287) is applicable to the B-BBEE compliance measurement of all entities that fall within the Construction Sector.

The requirements for measurement and verification of entities are contained in the “Amended Code Series CSC000: Framework for Measuring Broad Based Black Economic Empowerment in the Construction Sector”, as published in Notice 931 of 2017, Government Gazette No.41287 of 01/12/2017.

The requirements are summarised in the following table:

Enterprise Type	Total Annual Revenue (R million)	Ownership and Annual Turnover
EME: Built Environment Professional	< R1.8m	May present an affidavit OR a certificate issued by the CIPC OR
EME: Contractor	< R3.0m	authorised B-BBEE verification certificate (as below)
Reference should be made to Cl.3.6.2.4.1 of the Amended Construction Sector Code regarding the above exceptions.		
EME: Built Environment Professional	< R6m	Must present an authorised B-BBEE verification certificate by a SANAS accredited Verification Agency
EME: Contractor	< R10m	
QSE: Built Environment Professional	≥ R6.0m and < R25m	
QSE: Contractor	≥ R10.0m and < R50m	
Large Enterprise	>R50m	

The requirements for measurement of Joint Ventures is described in Cl.2.8 of the Amended Construction Sector Code. The compilation of a consolidated verification certificate is required.

B-BBEE Verification Certificates must be from a Verification Agency accredited by the South African National Accreditation System (SANAS).

Central Supplier Database (CSD)

The entities (full) Registration Report, obtained from the National Treasury Central Supplier Database, is to be included in the tender submission (<https://secure.csd.gov.za>).

Separate CSD Registration Reports are required for each entity in a Joint Venture.

F.3: THE EMPLOYER'S UNDERTAKINGS

- F.3.1.1 Respond to requests from the tenderer:** Replace the words “five working days” with “three working days”.
- F.3.2 Issue addenda:** Add the following paragraph: “Addenda will be published, in electronic format, on the National Treasury’s eTenders website. In the event that the Clarification Meeting is compulsory, Addenda will only be issued to those tendering entities appearing on the Clarification Meeting Register.”
- F.3.4 Opening of Tender Submissions:** Tenders will be opened immediately after the closing time for tenders. The public reading of tenders will take place online via Facebook and You Tube.
- F.3.11 Evaluation of Tender Offers:** The procedure for evaluation of responsive Tender Offers will be in accordance with the Employer’s current SCM Policy, the Preferential Procurement Policy Framework Act (5 of 2000)

The procedure for the evaluation of responsive tenders is **Method 1** (with Eligibility then Price and Preference).

The **90/10** preference points system will be used where the financial value (incl. VAT) of all responsive tenders received have a value in excess of R 50,000,000. The Formula used to calculate the **Price Points**, and the **Preference Points** that will be allocated, will be according to the specified PPPFA Regulations.

Only locally produced goods, services, or works, or locally manufactured goods, with a stipulated minimum threshold for Local Production and Content will be considered.

F.3.13 Acceptance of tender offer: In addition to the requirements of Clause F.3.13 of the Standard Conditions of Tender, tender offers will only be accepted if:

- (a) The tenderer submits a valid Tax Clearance Certificate OR Tax Compliance Status PIN, issued by the TCS System of the South African Revenue Services, or has made arrangements to meet outstanding tax obligations;
- (b) The tenderer is registered, and “Active”, with the Construction Industry Development Board, at time of tender closing, in an appropriate contractor grading designation;
- (c) 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;
- (d) The tenderer has not:
 - Abused the Employer’s Supply Chain Management System; or
 - Failed to perform on any previous contract and has been given a written notice to this effect;
- (e) The tenderer has completed the Compulsory Enterprise Questionnaire and there are no conflicts of interest which may impact on the tenderer’s ability to perform the contract in the best interests of the employer or potentially compromise the tender process;
- (f) The tenderer is registered and in good standing with the compensation fund or with a licensed compensation insurer;
- (g) 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.
- (h) If this tender is subject to “Local Content and Production”, the tenderer must complete and sign MBD 6.2 and attach Annexure C (of SATS 1286:2011).
- (i) The Municipality does not bind itself to accept the lowest or any tender. It reserves the right to accept the whole or any part of a tender to place orders. Bidders shall not bind the Municipality to any minimum quantity per order. The successful Tenderer (s) shall be bound to provide any quantities stipulated in the specification.

F.3.15 Complete adjudicator’s contract: Refer to the General Conditions of Contract and the Contract Data.

F.3.17 Copies of contract: The number of paper copies of the signed contract to be provided by the Employer is ONE (1). Bidders are also requested to submit a SOFT COPY of their complete tender document preferably on a Memory Stick.

The additional conditions of tender are:**ACT.1 Appeals**

In terms of Regulation 49 of the Municipal Supply Chain Management Regulations persons aggrieved by decisions or actions taken by the Municipality, may lodge an appeal within 14 days of the decision or action, in writing to the Municipality. All appeals (clearly setting out the reasons for the appeal) and queries with regard to the decision of award are to be directed to:

The City Manager
Attention Ms S. Pillay eMail: Simone.Pillay@durban.gov.za
P O Box 1394
DURBAN, 4000

ACT.2 Prohibition on awards to persons in the service of the state

Clause 44 of the Supply Chain Management Regulations states that the Municipality or Municipal Entity may not make any award to a person:

- (a) Who is in the service of the State;
- (b) If that person is not a natural person, of which a director, manager, principal shareholder or stakeholder is a person in the service of the state; or
- (c) Who is an advisor or consultant contracted with the municipality or a municipal entity.

Should a contract be awarded, and it is subsequently established that Clause 44 has been breached, the Employer shall have the right to terminate the contract with immediate effect.

ACT.3 Code of Conduct and Local Labour

The Tenderers shall make themselves familiar with the requirements of the following policies that are available on web address: <ftp://ftp.durban.gov.za/cesu/StdContractDocs/>:

- Code of Conduct;
- The Use of CLOs and Local Labour.

PART T2: RETURNABLE DOCUMENTS
T2.1: LIST OF RETURNABLE DOCUMENTS

T2.1.1 General

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.

The Tenderer is required to complete each and every Schedule and Form listed below 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.

T2.1.2 Returnable Schedules, Forms and Certificates

Company Specific

Certificate of Attendance at Clarification Meeting	13
Certificate of Authority	14
Declaration of Municipal Fees	15
Compulsory Enterprise Questionnaire	16
Tax Compliance Status PIN / Tax Clearance Certificate	18
B-BBEE Status Level of Contribution Certificate	19
CSD Registration Report	20
Contractor's Health and Safety Declaration	21

Eligibility

Verification of CIDB Registration and Status	23
Experience of Tenderer	24

Consolidated MBD Documents

MBD2: Tax Clearance Certificate Requirements	25
MBD4: Declaration of Interest	
MBD5: Declaration for Procurement Above R10 Million	
MBD6.1: Preference Points Claim Form ITO the Preferential Regulations	
MBD6.2: Declaration Certificate for Local Production and Content	
MBD8: Declaration of Bidder's Past SCM Practices	
MBD9: Certificate of Independent Bid Determination	

Technical and Evaluation

Experience of Tenderer	33
Experience of Key Personnel	34

Contractual

Joint Venture Agreements (if applicable)	37
Record of Addenda to Tender Documents	38
Amendments, Qualifications and Alternatives	39
Form of Offer	40
Bill of Quantities	55

T2.1.3 Preferential Procurement Schedules and Affidavits

In the event of the Tenderer not being registered with the eThekweni Municipality, the tenderer must register on the internet at www.durban.gov.za by following these links:

- eThekweni Municipality
- City Government
- Administration
 - Administrative Clusters
 - Finance
 - Supply Chain Management
 - Accredited Supplier and Contractor's Database.

NOTES

- (a) The information for registration as in the possession of the eThekweni Municipality will apply.
- (b) It is the Tenderer's responsibility to ensure that the details as submitted to the Municipality are correct.
- (c) Tenderers are to register prior to the submission of tenders.

T2.2: RETURNABLE SCHEDULES, FORMS, AND CERTIFICATES

The returnable schedules, forms, and certificates as listed in T2.1.2 can be found on the pages 13 to 21.

CERTIFICATE OF ATTENDANCE AT CLARIFICATION MEETING / SITE INSPECTION

This is to certify that:

(tenderer name)

of (address)

.....

was represented by the person(s) named below at the Clarification Meeting held for all tenderers, the details of which are stated in the Tender Data (F.2.7).

I / We acknowledge that the purpose of the meeting was to acquaint myself / ourselves with the site of the works and / or matters incidental to doing the work specified in the tender documents in order for me / us to take account of everything necessary when compiling our rates and prices included in the tender.

Particulars of person(s) attending the meeting:

Name:

Name:

Signature:

Signature:

Capacity:

Capacity:

Attendance of the above person(s) at the meeting is confirmed by the Employer's Agent's Representative, namely:

Name:

Signature:

Date:

CERTIFICATE OF AUTHORITY

Indicate the status of the tenderer by ticking the appropriate box hereunder.

COMPANY		CLOSE CORPORATION		PARTNERSHIP		JOINT VENTURE		SOLE PROPRIETOR	
Refer to Notes at the bottom of the page									

I / We, the undersigned, being the Chairperson (Company), Member(s) (Close Corporation), Partners (Partnership), Sole Owner (Sole Proprietor), Lead Partner (JV), in the company / business trading as:

.....

hereby authorise Mr/Mrs/Ms

acting in the capacity of

to sign all documents in connection with the tender for **Contract No. 1H-48296** and any contract resulting from it on our behalf.

NAME	ADDRESS	SIGNATURE	DATE

Notes

The following documents must be attached to the back inside cover to this procurement document:

If a Company : a "Resolution of the Board" in this regard.

If a Joint Venture : a "Power of Attorney" signed by the legally authorised signatories of all the partners to the Joint venture.

DECLARATION OF MUNICIPAL FEES

I, the undersigned, do hereby declare that the Municipal fees of

.....
 (full name of Company / Close Corporation / partnership / sole proprietary/Joint Venture)
 (hereinafter referred to as the TENDERER) are, as at the date hereunder, fully paid or an Acknowledgement of Debt has been concluded with the Municipality to pay the said charges in instalments.

The following account details relate to property of the said TENDERER:

Account

Account Number: to be completed by tenderer.

Consolidated Account No.

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Electricity

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Water

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Rates

--	--	--	--	--	--	--	--	--	--	--	--	--

JSB Levies

--	--	--	--	--	--	--	--	--	--	--	--	--

Other

--	--	--	--	--	--	--	--	--	--	--	--	--

Other

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I acknowledge that should the aforesaid Municipal charges fall into arrears, the Municipality may take such remedial action as is required, including termination of any contract, and any payments due to the Contractor by the Municipality shall be first set off against such arrears. ATTACHED, to the back inside cover of this document, please find copies of the above account's and or agreements signed with the municipality.

- Where the TENDERER'S place of business or business interests are outside the jurisdiction of eThekweni municipality, a copy of the accounts/agreements from the relevant municipality must be attached (to the back inside cover of this document).
- Where the tenderer's Municipal Accounts are part of their lease agreement, then a copy of the agreement, or official letter to that effect is to be attached (to the back inside cover of this document).

NAME :

(Block Capitals)

SIGNATURE :

DATE:

(of person authorised to sign on behalf of the Tenderer)

COMPULSORY ENTERPRISE QUESTIONNAIRE

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

- 1) **Name of enterprise:**
- 2) **VAT registration number**, if any:
- 3) **CIDB registration number**, if any:
- 4) **Particulars of sole proprietors and partners in partnerships**

Full Name	Identity number*	Personal income tax number *

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

5) **Particulars of companies and close corporations**

Company registration number, if applicable:

Close corporation number, if applicable:

Tax Reference number, if any:

6) **Record in the service of the state**

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

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

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

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 in the service of any of the following:

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

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 warrant that he/she is duly authorised to do so on behalf of the enterprise:

- i) authorizes the Employer to obtain a tax clearance certificate from the South African Revenue Services that my/our tax matters are in order;
- ii) confirms that neither the name of the enterprise or the name of any partner, manager, director or other person, who wholly or partly exercise, 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;
- iii) confirms that no partner, member, director or other person, who wholly or partly exercise, control over the enterprise appears, has within the last five years been convicted of fraud or corruption;
- iv) 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 bidders or those responsible for compiling the scope of work that could cause or be interpreted as a conflict of interest;
- v) 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

TAX COMPLIANCE STATUS PIN / TAX CLEARANCE CERTIFICATE

Reference is made to F.2.23 of the Conditions of Tender.

SARS has introduced a new Tax Compliance Status System. Tenderers can submit a Tax Compliance Status PIN (TCS PIN) instead of an original Tax Clearance Certificate. This TCS PIN can be used by third parties to certify the taxpayer's real-time compliance status.

Separate Tax Clearance Certificates / TCS PINs are required for each entity in a Joint Venture.

Tenderers are to attach to this page a printout of their Tax Compliance Status PIN (TCS PIN) OR an original Tax Clearance Certificate.

NAME : (Block Capitals)

SIGNATURE : DATE:
(of person authorised to sign on behalf of the Tenderer)

B-BBEE STATUS LEVEL OF CONTRIBUTION CERTIFICATE

Reference is made to F.2.23 of the Conditions of Tender.

The Amended Construction Sector Code (Government Gazette No.41287) is applicable to the B-BBEE compliance measurement of all entities that fall within the Construction Sector.

The requirements for measurement and verification of entities are contained in the "Amended Code Series CSC000: Framework for Measuring Broad Based Black Economic Empowerment in the Construction Sector", as published in Notice 931 of 2017, Government Gazette No.41287 of 01/12/2017.

The requirements are summarised in the following table:

Enterprise Type	Total Annual Revenue (R million)	Ownership and Annual Turnover
EME: Built Environment Professional	< R1.8m	May present an affidavit OR a certificate issued by the CIPC OR
EME: Contractor	< R3.0m	authorised B-BBEE verification certificate (as below)
Reference should be made to Cl.3.6.2.4.1 of the Amended Construction Sector Code regarding the above exceptions.		
EME: Built Environment Professional	< R6m	Must present an authorised B-BBEE verification certificate by a SANAS accredited Verification Agency
EME: Contractor	< R10m	
QSE: Built Environment Professional	≥ R6.0m and < R25m	
QSE: Contractor	≥ R10.0m and < R50m	
Large Enterprise	>R50m	

The requirements for measurement of Joint Ventures is described in Cl.2.8 of the Amended Construction Sector Code. The compilation of a consolidated verification certificate is required.

Tenderers are to attach to this page an affidavit, or a B-BBEE certificate issued by an authorised SANAS accredited Verification Agency.

NAME : (Block Capitals)

SIGNATURE : DATE:
(of person authorised to sign on behalf of the Tenderer)

CSD REGISTRATION REPORT

Reference is made to F.2.23 of the Conditions of Tender.

Clause F.2.1 of the Conditions of Tender – “Eligibility”, requires a tenderer to be registered at the time of tender closing on the National Treasury Central Supplier Database (CSD) as a service provider.

Tenderers are to attach to this page a printout of their CSD Registration Report, as obtained from the National Treasury’s CSD website <https://secure.csd.gov.za/Account/Login>. The date of obtaining the printout is to be indicated on the printout.

The following is an example of the beginning of the printout obtained from the above website.

 CENTRAL SUPPLIER DATABASE FOR GOVERNMENT	Report Date:
	Report Ran By:

CSD REGISTRATION REPORT	
SUPPLIER IDENTIFICATION	
Supplier number	
Is supplier active?	
Supplier type	
Supplier sub-type	
Legal name	
Trading name	
Identification type	
Government breakdown	
Business status	
Country of origin	
South African company/CC registration number	
Have Bank Account	
Total annual turnover	
Financial year start date	
Registration date	
Created by	
Created date	
Edit by	
Edit date	
Restricted Supplier	
Restriction Last Verification Date	

NAME :

(Block Capitals)

SIGNATURE :
(of person authorised to sign on behalf of the Tenderer)

DATE:

CONTRACTOR'S HEALTH AND SAFETY DECLARATION

Refer to Clause F3.11.9 for Functionality Points evaluation prompts (if applicable).

In terms of Clause 5(1)(h) of the OHSA 1993 Construction Regulations 2014 (referred to as "the Regulations" hereafter), a Principal Contractor may only be appointed to perform construction work if the Client is satisfied that the Principal Contractor has the necessary competencies and resources to carry out the work safely in accordance with the Occupational Health and Safety Act No 85 of 1993 and the OHSA 1993 Construction Regulations 2014.

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

Declaration by Tenderer

1. I the undersigned hereby declare and confirm that I am fully conversant with the Occupational Health and Safety Act No 85 of 1993 (as amended by the Occupational Health and Safety Amendment Act No 181 of 1993), and the OHSA 1993 Construction Regulations 2014.
2. I hereby declare that my company has the competence and the necessary resources to safely carry out the construction work under this contract in compliance with the Construction Regulations and the Employer's Health and Safety Specifications.
3. I propose to achieve compliance with the Regulations by one of the following:

Tenderers are
to Circle Applicable

- | | |
|---|---------------|
| (a) From my own competent resources as detailed in 4(a) hereafter: | YES NO |
| (b) From my own resources still to be appointed or trained until competency is achieved, as detailed in 4(b) hereafter: | YES NO |
| (c) From outside sources by appointment of competent specialist Subcontractors as detailed in 4(c) hereafter: | YES NO |

4. Details of resources I propose:

(Note: Competent resources shall include safety personnel such as a construction supervisor and construction safety officer as defined in Regulation 8, and competent persons as defined in Regulations 9, 10, 11, 12, 13, 14, 16, 17, 20, 21, 22, 23(1), 24, 25, 26, 27, 28 and 29, as applicable).

- (a) Details of the competent and qualified key persons from my company's own resources, who will form part of the contract team:

NAMES OF COMPETENT PERSONS	POSITIONS TO BE FILLED BY COMPETENT PERSONS

- (b) Details of training of persons from my company's own resources (or to be hired) who still have to be trained to achieve the necessary competency:

(i) By whom will training be provided?

(ii) When will training be undertaken?

(iii) List the positions to be filled by persons to be trained or hired:

.....

.....

- (c) Details of competent resources to be appointed as subcontractors if competent persons cannot be supplied from own company:

Name of proposed subcontractor:

Qualifications or details of competency of the subcontractor:

.....

.....

5. I hereby undertake, if my tender is accepted, to provide, before commencement of the works under the contract, a suitable and sufficiently documented Health and Safety Plan in accordance with Regulation 7(1) of the Construction Regulations, which plan shall be subject to approval by the Client.
6. I confirm that copies of my company's approved Health and Safety Plan, the Client's Safety Specifications as well as the OHSA 1993 Construction Regulations 2014 will be provided on site and will at all times be available for inspection by the Principal Contractor's personnel, the Client's personnel, the Employer's Agent, visitors, and officials and inspectors of the Department of Labour.
7. I hereby confirm that adequate provision has been made in my tendered rates and prices in the Bill of Quantities to cover the cost of all resources, actions, training and all health and safety measures envisaged in the OHSA 1993 Construction Regulations 2014, and that I will be liable for any penalties that may be applied by the Client in terms of the said Regulations (Regulation 33) for failure on the Principal Contractor's part to comply with the provisions of the Act and the Regulations.
8. I agree that my failure to complete and execute this declaration to the satisfaction of the Client will mean that I am unable to comply with the requirements of the OHSA 1993 Construction Regulations 2014, and accept that my tender will be prejudiced and may be rejected at the discretion of the Client.

NAME :

(Block Capitals)

SIGNATURE :
(of person authorised to sign on behalf of the Tenderer)

DATE:

ELIGIBILITY: VERIFICATION OF CIDB REGISTRATION AND STATUS

Reference is made to F.2.23 of the Conditions of Tender.

Clause F.2.1.1 of the Conditions of Tender – “Eligibility”, requires a tenderer to be registered, as “Active”, with the CIDB (at time of tender closing), in a contractor grading designation equal to or higher than a contractor grading designation determined in accordance with the sum tendered, or a value determined in accordance with Regulation 25 (1B) or 25(7A) of the Construction Industry Development Regulations, for a **CE** class of construction work.

Tenderers are to attach to this page a printout of their registration with the CIDB, as obtained from the CIDB website <https://registers.cidb.org.za/PublicContractors/ContractorSearch>. The date of obtaining the printout is to be indicated on the printout.

The following is an example of a printout obtained from the above website.

Home

construction industry development board

Contractor Detail Print

Contractor Detail

CRS Number: _____ Type of Enterprise: _____

Contractor Name: _____ Registration Date: _____

Trading Name: _____ Expiry Date: _____

Status: _____

Contractor Grades

Grade: _____

Back

Copyright © cidb 2011. All rights reserved
[Website technical enquires contact](#)

01/01/2017

NAME : (Block Capitals)

SIGNATURE : DATE:
 (of person authorised to sign on behalf of the Tenderer)

ELIGIBILITY: EXPERIENCE OF TENDERER

Experience Eligibility are specified in Clause F.2.1.1.2 of the Conditions of Tender in Part T1.2.

This form is to be copied and used for each submission of experience, as may be required.

Where options are provided (), only one (1) selected option should be clearly marked with a “ X ”.

Tenderer's CIDB Grade:	1'	2'	3'	4'	5'	6'	7'	8'	9'	Experience as a:	Sub-Contractor'	Main Contractor'
Client / Employer:	Entity Name:											
	Contact Name:											
	Contact Tel:											
	Contact Cell:											
	Contact email / other:											
Employer's Agent (Engineer) OR Main Contractor's Details	Entity Name:											
	Contact Name:											
	Contact Tel:											
	Contact Cell:											
	Contact email / other:											
Contract Details	Contract Number:											
	Contract Title:											
	Has this Contract been completed?									Y'	N'	
Tendered Value (Contract Sum) OR Sub-Contract Value:									Final Contract Price OR Final Value of Sub-Contract:			

Contract Scope-of-Work (Description of Works components)	If available in hard copy, the Scope-of-Work can be attached. Only include the Scope-of-Work (contract description). <u>The Specification is not required.</u>

In addition to the Scope-of-Work (entered above or attached) the following documentation / information is required to be attached to the back of this form.					
Contractor Type	Proof of Sub-Contract Agreement	Letter of Award OR Form of Offer & Acceptance	Most recent Payment Certificate with Quantities summary	Final Payment Certificate with Quantities summary	Completion Certificate
Completed Contract as Main Contractor		X		X	X
Failure to submit this returnable form, and provide the above supporting documentation/ information, for each submission of experience, will invalidate that experience submission					

NAME :

(Block Capitals)

SIGNATURE :
(of person authorised to sign on behalf of the Tenderer)

DATE:

CONSOLIDATED MUNICIPAL BIDDING DOCUMENTS

The following SECTIONS are required to be completed as part of this procurement document

<u>Section</u>	<u>Description</u>	<u>Required?</u>
A	General Enterprise Information	Yes
B	MBD2: Tax Clearance Certificate Requirements	Yes
C	MBD4: Declaration of Interest	Yes
D	MBD5: Declaration for Procurement Above R10 Million	Yes
E	MBD6.1: Preference Points Claim Form ITO the Preferential Regulations	Yes
F	MBD6.2: Declaration Certificate for Local Production and Content for Designated Sectors	Yes
G	MBD8: Declaration of Bidder's Past SCM Practices.....	Yes
H	MBD9: Certificate of Independent Bid Determination.....	Yes
I	Confirmations, Authorities, Certifications, Acknowledgements and Signatures	Yes

NOTES

- MBD4. MSCM 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 enterprise;
 - (c) an official of any municipality or municipal enterprise;
 - (d) an employee of any national or provincial department, national or provincial public enterprise 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 enterprise; or
 - (f) an employee of Parliament or a provincial legislature.
- "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.
- MBD9. 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.

<u>Ref</u>	<u>Description</u>	<u>Complete or Circle Applicable</u>
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SECTION A: GENERAL ENTERPRISE INFORMATION

- 1.0 Full Name of bidder or his or her representative
- 1.1 ID Number of bidder or his or her representative
- 1.2 Position occupied in the enterprise
- 2.0 Name of enterprise:
- 2.1 Tax Reference number, if any:
- 2.2 VAT registration number, if any:
- 2.3 CIDB registration number, if any:
- 2.4 Company registration number, if applicable:
- 2.5 Close corporation number, if applicable:
- 2.6 eThekweni Supplier Database:
Reference number (PR), if any:
- 2.7 South African Revenue Service:
Tax Compliance Status PIN:
- 2.8 National Treasury Central Supplier Database
Registration number
- 2.9 Department of Labour:
Registration number
- 2.10 Department of Labour:
Letter of Good Standing Certificate number

- 3.0 The names of all directors / trustees / shareholders / members / sole proprietors / partners in partnerships, their individual identity numbers and state employee numbers must be indicated below. In the case of a joint venture, information in respect of each partnering enterprise must be completed and submitted

Full Name	Identity No.	State Employee No.	Personal income tax No. *
Use additional pages if necessary			

Ref	Description	Complete or Circle Applicable
-----	-------------	-------------------------------

SECTION B: MBD 2: TAX CLEARANCE CERTIFICATE REQUIREMENTS

It is a condition of bid that the taxes of the successful bidder must be in order, or that satisfactory arrangements have been made with South African Revenue Service (SARS) to meet the bidder's tax obligations.

- 1.0 In order to meet this requirement bidders are required to complete the TCC 001: "Application for a Tax Clearance Certificate" form and submit it to any SARS branch office nationally. The Tax Clearance Certificate Requirements are also applicable to foreign bidders / individuals who wish to submit bids.
- 2.0 SARS will then furnish the bidder with a Tax Clearance Certificate that will be valid for a period of 1 (one) year from the date of approval.
- 3.0 The original Tax Clearance Certificate must be submitted together with the bid (attached to the inside back cover of this procurement document). Failure to submit the original and valid Tax Clearance Certificate will result in the invalidation of the bid. Certified copies of the Tax Clearance Certificate will not be acceptable.
- 4.0 In bids where Consortia / Joint Ventures / Sub-contractors are involved, each party must submit a separate Tax Clearance Certificate.
- 5.0 Copies of the TCC 001: "Application for a Tax Clearance Certificate" form are available from any SARS branch office nationally or on the website www.sars.gov.za.
- 6.0 Applications for the Tax Clearance Certificates may also be made via eFiling. In order to use this provision, taxpayers will need to register with SARS as eFilers through the website www.sars.gov.za.
- 7.0 Notwithstanding Clauses 1.0 to 6.0 above: Since 18 April 2016, SARS has introduced a new Tax Compliance Status System (TCS). As part of this enhanced system, tenderers can now submit a Tax Compliance Status PIN instead of an original Tax Clearance Certificate (TCC). This TCS PIN can be used by third parties to certify the taxpayer's real-time compliance status. This number, if available, is to be entered in Item 2.7 of Section A of these consolidated Municipal Bidding Documents.
For further particulars please contact your nearest SARS branch, or call the SARS Contact Centre on 0800 00 7277, or log onto SARS eFiling.

SECTION C: MBD 4: DECLARATION OF INTEREST

No bid will be accepted from persons "in the service of the state". 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 and/or take an oath declaring his/her interest. In order to give effect to the above, the following questionnaire must be completed and submitted with the bid.

1.0	Are you presently in the service of the state? If yes, furnish particulars:	YES	NO
2.0	Have you been in the service of the state for the past twelve months? If yes, furnish particulars:	YES	NO
3.0	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? If yes, furnish particulars:	YES	NO
4.0	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? If yes, furnish particulars:	YES	NO
5.0	Are any of the company's directors, trustees, managers, principle shareholders or stakeholders in service of the state? If yes, furnish particulars:	YES	NO
6.0	Are any spouse, child or parent of the company's directors, trustees, managers, principle shareholders or stakeholders in service of the state? If yes, furnish particulars:	YES	NO
7.0	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 ? If yes, furnish particulars:	YES	NO
8.0	The names of all directors / trustees / shareholders / members / sole proprietors / partners in partnerships, their individual identity numbers and state employee numbers are indicated in SECTION A of these Consolidated Municipal Bidding documents .		

Ref	Description	Complete or Circle Applicable	
SECTION D: 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.			
1.0	Are you by law required to prepare annual financial statements for auditing? If YES, you will be required to submit audited annual financial statements (on request during the tender evaluation period) for the past three years or since the date of establishment if established during the past three years.	YES	NO
2.0	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? 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. If YES, provide particulars on a letterhead. (Attach this letter to the back inside cover of this procurement document).	YES	NO
3.0	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? If YES, provide particulars on a letterhead. (Attach this letter to the back inside cover of this procurement document).	YES	NO
4.0	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? If YES, provide particulars on a letterhead. (Attach this letter to the back inside cover of this procurement document).	YES	NO

SECTION E: MBD 6.1: PREFERENCE POINTS CLAIM ITO THE PREFERENTIAL REGULATIONS			
Preference points for this tender shall be awarded as per the Tender Data and the Preferential Procurement Regulations (2017). Failure on the part of a tenderer to submit a B-BBEE Verification Certificate from a Verification Agency accredited by the South African Accreditation System (SANAS), or a Sworn Affidavit for an EME, or sworn affidavit for a QSE (in line with the revised BBBEE codes of Good Practice), together with the bid will be interpreted to mean that preference points for B-BBEE status level of contribution are not claimed. The Employer reserves the right to require of a tenderer, either before a bid is adjudicated or at any time subsequently, to substantiate any claim in regard to preferences, in any manner required by the Employer.			
1.0	B-BBEE Status Level of Contribution claimed:		
	Will any portion of the contract be sub-contracted?	YES	NO
	If YES, indicate:		
	(i) what percentage of the contract will be subcontracted?		
	(ii) the name of the sub-contractor?		
	Name:		
	(iii) the B-BBEE status level of the sub-contractor?		
2.0	(iv) whether the sub-contractor is an EME?	YES	NO
The undersigned, certify that the B-BBEE status level of contribution indicated in paragraph 1.0 above qualifies the company / firm for preference points and acknowledges that the remedies as per Clause 14 of the Preferential Procurement Regulations (2017) shall apply.			

SECTION F: MBD 6.2: DECLARATION CERTIFICATE FOR LOCAL PRODUCTION AND CONTENT FOR DESIGNATED SECTORS			
This Municipal Bidding Document (MBD) must form part of all bids invited. It contains general information and serves as a declaration form for local content (local production and local content are used interchangeably). Before completing this declaration, bidders must study the General Conditions, Definitions, Directives applicable in respect of Local Content as prescribed in the Preferential Procurement Regulations, 2017 and the South African Bureau of Standards (SABS) approved technical specification number SATS 1286:2011 (Edition 1) and the Guidance on the Calculation of Local Content together with the Local Content Declaration Templates [Annex C (Local Content Declaration: Summary Schedule), D (Imported Content Declaration: Supporting Schedule to Annex C) and E (Local Content Declaration: Supporting Schedule to Annex C)].			

- 1.0 General Conditions
- 1.1 Preferential Procurement Regulations, 2017 (Regulation 8) makes provision for the promotion of local production and content.
- 1.2 Regulation 8.(1) prescribes that in the case of designated sectors, where in the award of bids local production and content is of critical importance, such bids must be advertised with the specific bidding condition that only locally produced goods, services or works or locally manufactured goods, with a stipulated minimum threshold for local production and content will be considered.
- 1.3 Where necessary, for bids referred to in paragraph 1.2 above, a two-stage bidding process may be followed, where the first stage involves a minimum threshold for local production and content and the second stage price and B-BBEE.

Ref	Description	Complete or Circle Applicable								
1.4	A person awarded a contract in relation to a designated sector, may not sub-contract in such a manner that the local production and content of the overall value of the contract is reduced to below the stipulated minimum threshold.									
1.5	The local content (LC) expressed as a percentage of the bid price must be calculated in accordance with the SABS approved technical specification number SATS 1286: 2011 as follows: $LC = [1 - x / y] * 100$ Where: x is the imported content in Rand y is the bid price in Rand excluding value added tax (VAT). Prices referred to in the determination of x must be converted to Rand (ZAR) by using the exchange rate published by the South African Reserve Bank (SARB) at 12:00 on the date of advertisement of the bid as required in paragraph 4.1 below. The SABS approved technical specification number SATS 1286:2011 is accessible on http://www.thedti.gov.za/industrial development/ip.jsp at no cost.									
1.6	A bid may be disqualified if – (a) this Declaration Certificate and the Annex C (Local Content Declaration: Summary Schedule) are not submitted as part of the bid documentation; and (b) the bidder fails to declare that the Local Content Declaration Templates (Annex C, D and E) have been audited and certified as correct.									
2.0	Definitions									
2.1	“bid” includes written price quotations, advertised competitive bids or proposals;									
2.2	“bid price” price offered by the bidder, excluding value added tax (VAT);									
2.3	“contract” means the agreement that results from the acceptance of a bid by an organ of state;									
2.4	“designated sector” means a sector, sub-sector or industry that has been designated by the Department of Trade and Industry in line with national development and industrial policies for local production, where only locally produced services, works or goods or locally manufactured goods meet the stipulated minimum threshold for local production and content;									
2.5	“duly sign” means a Declaration Certificate for Local Content that has been signed by the Chief Financial Officer or other legally responsible person nominated in writing by the Chief Executive, or senior member / person with management responsibility (close corporation, partnership or individual).									
2.6	“imported content” means that portion of the bid price represented by the cost of components, parts or materials which have been or are still to be imported (whether by the supplier or its subcontractors) and which costs are inclusive of the costs abroad (this includes labour and intellectual property costs), plus freight and other direct importation costs, such as landing costs, dock duties, import duty, sales duty or other similar tax or duty at the South African port of entry;									
2.7	“local content” means that portion of the bid price which is not included in the imported content, provided that local manufacture does take place;									
2.8	“stipulated minimum threshold” means that portion of local production and content as determined by the Department of Trade and Industry; and									
2.9	“sub-contract” means the primary contractor’s assigning, leasing, making out work to, or employing another person to support such primary contractor in the execution of part of a project in terms of the contract.									
3.0	The stipulated minimum threshold(s) for local production and content (refer to Annex A of SATS 1286:2011) for this bid is/are as follows: <table border="1"> <thead> <tr> <th>Description of services, works or goods</th> <th>Stipulated minimum threshold</th> </tr> </thead> <tbody> <tr> <td>.....</td> <td>..... %</td> </tr> <tr> <td>.....</td> <td>..... %</td> </tr> <tr> <td>.....</td> <td>..... %</td> </tr> </tbody> </table>	Description of services, works or goods	Stipulated minimum threshold		 %		 %		 %	
Description of services, works or goods	Stipulated minimum threshold									
.....	 %									
.....	 %									
.....	 %									
4.0	Does any portion of the services, works or goods offered have any imported content?	<table border="1"> <tr> <td>YES</td> <td>NO</td> </tr> </table>	YES	NO						
YES	NO									
4.1	If yes, the rate(s) of exchange to be used in this bid to calculate the local content as prescribed in paragraph 1.5 of the general conditions must be the rate(s) published by the SARB for the specific currency at 12:00 on the date of advertisement of the bid. The relevant rates of exchange information is accessible on www.reservebank.co.za. Indicate the rate(s) of exchange against the appropriate currency in the table below (refer to Annex A of SATS 1286:2011): US Dollar: Pound Sterling: Euro: Yen: Other: NB: Bidders must submit proof of the SARB rate (s) of exchange used.									
5.0	Were the Local Content Declaration Templates (Annex C, D and E) audited and certified as correct?	<table border="1"> <tr> <td>YES</td> <td>NO</td> </tr> </table>	YES	NO						
YES	NO									
5.1	If yes, provide the following particulars: (a) Full name of auditor: (b) Practice number: (c) Telephone number: Cell number: (d) Email address: (Documentary proof regarding the declaration will, when required, be submitted to the satisfaction of the Accounting Officer / Accounting Authority)									
6.0	Where, after the award of a bid, challenges are experienced in meeting the stipulated minimum threshold for local content the dti must be informed accordingly in order for the dti to verify and in consultation with the Accounting Officer / Accounting Authority provide directives in this regard.									

LOCAL CONTENT DECLARATION
(REFER TO ANNEX B OF SATS 1286:2011)

LOCAL CONTENT DECLARATION BY CHIEF FINANCIAL OFFICER OR OTHER LEGALLY RESPONSIBLE PERSON NOMINATED IN WRITING BY THE CHIEF EXECUTIVE OR SENIOR MEMBER/PERSON WITH MANAGEMENT RESPONSIBILITY (Close Corporation, Partnership or Individual)

.....
IN RESPECT OF BID No:

.....
ISSUED BY: (Procurement Authority / Name of Municipality / Municipal Entity)

NB 1 - The obligation to complete, duly sign and submit this declaration cannot be transferred to an external authorized representative, auditor or any other third party acting on behalf of the bidder.

NB 2 - Guidance on the Calculation of Local Content together with Local Content Declaration Templates (Annex C, D and E) is accessible on [http://www.thedti.gov.za/industrial development/ip.jsp](http://www.thedti.gov.za/industrial%20development/ip.jsp). Bidders should first complete Declaration D. After completing Declaration D, bidders should complete Declaration E and then consolidate the information on Declaration C. Declaration C should be submitted with the bid documentation at the closing date and time of the bid in order to substantiate the declaration made in paragraph (c) below. Declarations D and E should be kept by the bidders for verification purposes for a period of at least 5 years. The successful bidder is required to continuously update Declarations C, D and E with the actual values for the duration of the contract.

I, the undersigned in Section H of these Consolidated MBD returnable questionnaires (comprising 8 pages), do hereby declare the following:

- (a) The facts contained herein fall within my own personal knowledge.
- (b) I have satisfied myself that:
 - (i) the goods/services/works to be delivered in terms of the above-specified bid comply with the minimum local content requirements as specified in the bid, and as measured in terms of SATS 1286:2011; and
 - (ii) the declaration templates have been audited and certified to be correct.
- (c) The local content percentages (%) indicated below has been calculated using the formula given in clause 3 of SATS 1286:2011, the rates of exchange indicated in paragraph 4.1 above and the information contained in Declaration D and E which has been consolidated in Declaration C;

..... B	R
id price, excluding VAT (y)	
..... I	R
ported content (x), as calculated in terms of SATS 1286:2011	
..... S	%
tipulated minimum threshold for local content (paragraph 3 above)	
..... L	%
ocal content %, as calculated in terms of SATS 1286:2011	

If the bid is for more than one product, the local content percentages for each product contained in Declaration C shall be used instead of the table above. The local content percentages for each product has been calculated using the formula given in clause 3 of SATS 1286:2011, the rates of exchange indicated in paragraph 4.1 above and the information contained in Declaration D and E.

- (d) I accept that the Procurement Authority / Municipality /Municipal Entity has the right to request that the local content be verified in terms of the requirements of SATS 1286:2011.
- (e) I understand that the awarding of the bid is dependent on the accuracy of the information furnished in this application. I also understand that the submission of incorrect data, or data that are not verifiable as described in SATS 1286:2011, may result in the Procurement Authority / Municipal / Municipal Entity imposing any or all of the remedies as provided for in Regulation 14 of the Preferential Procurement Regulations, 2017 promulgated under the Preferential Policy Framework Act (PPFA), 2000 (Act No. 5 of 2000).

SECTION G: MBD8: DECLARATION OF BIDDER'S PAST SUPPLY CHAIN MANAGEMENT PRACTICES

This Municipal Bidding Document must form part of all bids invited. 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.

The bid of any bidder may be rejected if that bidder, or any of its directors have:

- a) abused the 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) wilfully 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).

In order to give effect to the above, the following questions must be answered.

1.0	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? 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 audi alteram partem rule was applied. 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.	YES	NO
	If yes, furnish particulars:		

2.0	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)? 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. If yes, furnish particulars:	YES	NO
3.0	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? If yes, furnish particulars:	YES	NO
4.0	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? If yes, furnish particulars:	YES	NO
5.0	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? If yes, furnish particulars:	YES	NO

SECTION H: MBD9: CERTIFICATE OF INDEPENDENT BID DETERMINATION

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.

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) take all reasonable steps to prevent such abuse;
- (b) reject 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.

The following 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.

In order to give effect to the above, the following Certificate of Bid Determination must be completed and submitted with the bid. The undersigned, in submitting the accompanying bid, in response to the invitation for the bid do hereby make the following statements that I certify to be true and complete in every respect:

- 1.0 I have read and I understand the contents of this Certificate;
- 2.0 I understand that the accompanying bid will be disqualified if this Certificate is found not to be true and complete in every respect;
- 3.0 I am authorized by the bidder to sign this Certificate, and to submit the accompanying bid, on behalf of the bidder;
- 4.0 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;
- 5.0 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.
- 6.0 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. (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.
- 7.0 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;
 - f) bidding with the intention not to win the bid.
- 8.0 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.
- 9.0 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.
- 10.0 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.

SECTION I: CONFIRMATIONS, AUTHORITIES, CERTIFICATIONS, ACKNOWLEDGEMENTS and SIGNATURES

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

- 1.0 Confirms that the contents of these Consolidated MBD returnable questionnaires (comprising 8 pages) fall within my personal knowledge and are to the best of my Knowledge and belief, both true and correct;
- 2.0 Confirms that neither the name of the enterprise or the name of any partner, manager, director or other person, who wholly or partly exercise, 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;
- 3.0 Confirms that no partner, member, director or other person, who wholly or partly exercise control over the enterprise, has within the last five years been convicted of fraud or corruption;
- 4.0 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 bidders or those responsible for compiling the scope of work that could cause or be interpreted as a conflict of interest;
- 5.0 Certify that the B-BBEE status level of contribution indicated in Section E.1: Item 1.0 qualifies the enterprise for preference points and acknowledges that the remedies as per Clause 14 of the Preferential Procurement Regulations (2017) shall apply. In the event of a contract being awarded as a result of points claimed, the enterprise may be required to furnish documentary proof to the satisfaction of the employer that the claims are correct;
- 6.0 Accept that, in addition to cancellation of a contract, action may be taken against me should these declarations prove to be false.

Signed Date

Name Position

KEY PERSONNEL

The Tenderer shall list below the personnel which he intends to utilize on the Works, including key personnel (Contract's Manager, Site Agent, and Foremen) which may have to be brought in from outside if not available locally.

CATEGORY OF EMPLOYEE	NUMBER OF PERSONS	
	KEY PERSONNEL, PART OF THE CONTRACTOR'S ORGANISATION	KEY PERSONNEL TO BE IMPORTED IF NOT AVAILABLE LOCALLY
Contract's Manager		
Site Agent		
Foremen		

Note: CVs of key personnel may be requested during the contract period.

NAME : (Block Capitals)

SIGNATURE : DATE:
(of person authorised to sign on behalf of the Tenderer)

EXPERIENCE OF KEY PERSONNEL

The experience of assigned staff member in relation to the Scope of Work will be evaluated from three different points of view:

- 1) General experience (total duration of professional activity), level of education and training and positions held of each discipline specific team leader.
- 2) The education, training, skills and experience of the Assigned Staff in the specific sector, field, subject, etc which is directly linked to the scope of work.
- 3) The key staff members' / experts' knowledge of issues which the tenderer considers pertinent to the project e.g. local conditions, affected communities, legislation, techniques etc.

A CV of the contract manager, site agent(s) and general foreman of not more than 2 pages should be attached to this schedule:

Each CV should be structured under the following headings:

- a) Personal particulars
 - name
 - date and place of birth
 - place (s) of tertiary education and dates associated therewith
 - professional awards
- b) Qualifications (degrees, diplomas, grades of membership of professional societies and professional registrations)
- c) Skills
- d) Name of current employer and position in enterprise
- e) Overview of post graduate / diploma experience (year, organization and position)
- f) Outline of recent assignments / experience that has a bearing on the scope of work

NAME : (Block Capitals)

SIGNATURE : DATE:
(of person authorised to sign on behalf of the Tenderer)

PLANT and EQUIPMENT

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

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

DESCRIPTION (type, size, capacity etc)	QUANTITY	YEAR OF MANUFACTURE

Attach additional pages if more space is required

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

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

Attach additional pages if more space is required

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

NAME : (Block Capitals)

SIGNATURE : DATE:
(of person authorised to sign on behalf of the Tenderer)

CONTRACTOR'S HEALTH AND SAFETY PLAN

At tender stage only a brief overview (**to be attached to this page**) of the tenderers perception on the safety requirements for this contract will be adequate.

Only the successful Tenderer shall submit separately the Contractor's Health and Safety Plan as required in terms of Regulation 7 of the Occupational Health and Safety Act 1993 Construction Regulations 2014.

The detailed safety plan will take into consideration the site specific risks as mentioned under Part C.3: Project Specification. A generic plan will not be acceptable.

NAME : (Block Capitals)

SIGNATURE : DATE:
(of person authorised to sign on behalf of the Tenderer)

JOINT VENTURES AGREEMENTS

Joint Venture agreement and Power of Attorney Agreements to be attached here (if applicable).

RECORD OF ADDENDA TO TENDER DOCUMENTS

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

ADD.No	DATE	TITLE OR DETAILS
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		

NAME :

(Block Capitals)

SIGNATURE :
(of person authorised to sign on behalf of the Tenderer)

DATE:

AMENDMENTS, QUALIFICATIONS AND ALTERNATIVES

(This is not an invitation for amendments, deviations or alternatives but should the Tenderer desire to make any departures from the provisions of this contract he shall set out his proposals clearly hereunder. The Employer will not consider any amendment, alternative offers or discounts unless forms (a), (b) and (c) have been completed to the satisfaction of the Employer).

I / We herewith propose the amendments, alternatives and discounts as set out in the tables below:

(a) AMENDMENTS

PAGE, CLAUSE OR ITEM NO	PROPOSED AMENDMENT

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

(b) ALTERNATIVES

PROPOSED ALTERNATIVE	DESCRIPTION OF ALTERNATIVE

- (1) *Individual alternative items that do not justify an alternative tender, and an alternative offer for time for completion should be listed here.*
 (2) *In the case of a major alternative to any part of the work, a separate Bill of Quantities, programme, etc, and a detailed statement setting out the salient features of the proposed alternatives must accompany the tender.*
 (3) *Alternative tenders involving technical modifications to the design of the works and methods of construction shall be treated separately from the main tender offer.*

(c) DISCOUNTS

ITEM ON WHICH DISCOUNT IS OFFERED	DESCRIPTION OF DISCOUNT OFFERED

- (1) *The Tenderer must give full details of the discounts offered in a covering letter attached to his tender, failing which, the offer will be prejudiced.*

NAME :

(Block Capitals)

SIGNATURE :
 (of person authorised to sign on behalf of the Tenderer)

DATE:

PART C1: AGREEMENT AND CONTRACT DATA**C1.1: FORM OF OFFER AND ACCEPTANCE****C1.1.1: OFFER**

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

Contract No: **1H-48296**

Contract Title: **Construction of Civil Infrastructure for Umlazi Zone 2**

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 Tender Schedules, and by submitting this Offer has accepted the Conditions of Tender.

By the representative of the Tenderer, deemed to be duly authorised, 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.

For the Tenderer:

*** Name of Tenderer** (*organisation*) :

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

*** Name** (*of signatory in capitals*) :

Capacity (*of Signatory*) :

Address :

:

Telephone :

Witness:

Signature : **Date** :

Name(*in capitals*) : :

Notes:

*** Indicates what information is mandatory.**

Failure to complete the mandatory information and sign this form will invalidate the tender.

C1.1: FORM OF OFFER AND ACCEPTANCE**C1.1.2: FORM OF ACCEPTANCE****This Form will be completed by the Employer**

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 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 C1 : Agreement and Contract Data, (which includes this Agreement)
- Part C2 : Pricing Data, including the Bill of Quantities
- Part C3 : Scope of Work
- Part C4 : 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 authorised representatives of both parties.

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

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

Signature (*person authorized to sign the acceptance*) :

Name (*of signatory in capitals*) :

Capacity (*of Signatory*) :

Name of Employer (*organisation*) :

Address :

:

Witness:

Signature : **Date** :

Name (*in capitals*) : :

C1.1: FORM OF OFFER AND ACCEPTANCE**C1.1.3: SCHEDULE OF DEVIATIONS****This form will be completed by THE EMPLOYER and ONLY THE SUCCESSFUL TENDERER**

1. **Subject** :
- Details** :
- :
2. **Subject** :
- Details** :
- :
3. **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.

FOR THE TENDERER**FOR THE EMPLOYER**

.....	Signature	
.....	Name (<i>in capitals</i>)	
.....	Capacity	
.....	Name and Address of	
.....	Organisation	
.....		
.....		
.....	Witness Signature	
.....	Witness Name	
.....	Date	

C1.2: CONTRACT DATA**C1.2.1 CONDITIONS OF CONTRACT****C1.2.1.1 GENERAL CONDITIONS OF CONTRACT**

The Conditions of Contract are the General Conditions of Contract for Construction Works (2015 3rd Edition), (GCC 2015) published by the South African Institution of Civil Engineering. Copies of these conditions of contract may be obtained from the South African Institution of Civil Engineering (Tel: 011-805-5947, Fax: 011-805-5971, E-mail: civilinfo@saice.org.za).

The Contract Data (including variations and additions) shall amplify, modify, or supersede, the GCC 2015 to the extent specified below, and shall take precedence and shall govern.

Each item of data given below is cross-referenced to the clause in the GCC 2015 to which it mainly applies.

C1.2.2 CONTRACT DATA**C1.2.2.1 DATA TO BE PROVIDED BY THE EMPLOYER**

1.1.1.13 The **Defects Liability Period**, from the date of the Certificate of Completion, is **1 Year**.

1.1.1.14 The **time for achieving Practical Completion**, from the Commencement Date is **24 Months**. The period as stated in 5.3.2, and the 37 days referred to in 5.3.3, are included in the above time for achieving Practical Completion. The special non-working days as stated in 5.8.1 are excluded from the above time for achieving Practical Completion.

1.1.1.15 The Employer is the eThekweni Municipality as represented by:
HUMAN SETTLEMENTS UNIT : Deputy Head: Housing Engineering .

1.2.1.2 The address of the Employer is:
Physical: Human Settlements Unit, 20th Floor Embassy Building, DURBAN, 4001
Postal: Engineering Unit, P O Box 3858, DURBAN, 4000
Telephone: 031-311 6487 (t)
Fax: N/A
E-Mail: Ashley.Roopnarain@durban.gov.za

1.1.1.16 The **name of the Employer's Agent** is Ashley Roopnarian

1.2.1.2 The address of the Employer' Agent is:
Physical: Human Settlements Unit, 20th Floor Embassy Building, DURBAN, 4001
Postal: Human Settlements Unit, P O Box 680, DURBAN, 4000
Telephone: 031 311 6487 (t)
Fax: N/A
E-Mail: Ashley Roopnarian@durban.gov.za

1.1.1.26 The **Pricing Strategy** is by **Re-measurement Contract**.

Add the following:

"In the event of any ambiguity, conflict or discrepancy between the various contract documents, lists and schedules, the order of precedence (from highest to lowest) shall be as follows:

1. Form of Offer and Acceptance and Schedule of Deviations
2. Contract Data
3. General Conditions of Contract (2015)
4. Project Specifications

5. Construction Drawings
6. SANS 1200 Standardization Specifications for Civil Engineering Construction
7. Bills of Quantities

3.2.3 The Employer's Agent shall obtain the **specific approval of the Employer** before executing any of his functions or duties according to the following Clauses of the General Conditions of Contract:

- 3.2.1: Nomination of person as Employers Agents Representative.
- 4.7: The issuing of instructions for dealing with fossils and the like.
- 5.7.2: Work at night as well as by day.
- 5.8: Non-working times.
- 5.12: Ruling in terms of Clause 10.1.5 on claims submitted by the Contractor, with the exception of claims relating to Clause 5.12.2.2 (Abnormal climatic conditions).
- 5.12.1: The approval of any extension of time for completion.
- 5.12.4: The issuing of instruction to accelerate progress.
- 5.13.1: The issuing of penalties.
- 5.13.2: The reduction of a penalty.
- 5.14.2: The issue of a Certificate of Practical Completion.
- 5.14.4: The issue of a Certificate of Completion.
- 5.16.1: The issue of a Final Approval Certificate.
- 6.3.2: The issuing of variation orders.
- 6.8.4: The determination of additional or reduced costs arising from changes in legislation.
- 6.11: The agreeing of the adjustment of the sums for general items.
- 8.2.2.2: Order to repair and make good damage arising from any "expected" risk.
- 4.11.1 6.3 : Council approval in order to authorise any expenditure in excess of the Tender Sum plus **15%** contingencies.

4.3.3 Add the following new clause:
"Contractor's Designer"

The Contractor and his designer shall accept full responsibility and liability for compliance with the Occupational Health and Safety Act, 1993 (Act 85 of 1993) and the Construction Regulations, 2014, for the design of the Temporary Works (sub-clause 6,2 & 12,1) and those parts of the Permanent Works which the Contractor is responsible to design."

For the purposes of this contract, a "competent person" in terms of sub-clause 1 (a) of the Construction Regulations shall be a person who is registered as a Pr. Eng, Pr. Tech Eng or Pr Techni Eng with the Engineering Council of South Africa and who has the relevant training and experience to be able to design the component part of the permanent or temporary works as applicable.

For the purposes of this Contract, "Temporary Works" as defined in the Construction Regulations shall include the following component parts;

1. All Site Camp Structures
2. Hoarding and Barricading
3. Demolition Works (including blasting)
4. Securing excavations from the risk of collapse (Shoring and other measures)
5. Motorised and Non-Motorised Traffic Accommodation
6. Permanent and Temporary Services Relocations and Bypasses
7. Search for, expose, protect and backfill existing services
8. Dealing with Ground Water

The Contractor shall provide the following to the Employer's Agent for retention by the Employer or his assignee in respect of all works designed by the Contractor:

4.3.3.1 A Certificate of Stability of the Works signed by a registered Professional Engineer/Technologist/Technician confirming that all such works have been designed in terms of accordance with the appropriate codes of practice.

4.3.3.2 Design calculations should the Employer's Agent request a copy thereof.

4.3.3.4 Engineering drawings and workshop details (both signed by the relevant professional), in order to allow the Engineer to compare the design with the specified requirements and to record any comments he may have with respect thereto.

4.3.3.5 "As-Built" drawings in AutoCAD electronic format after completion of the Works.

Notwithstanding the list of temporary works envisaged on this project, the Contractor shall be responsible for the design of All Temporary Works (including any temporary works required by the EMEs/QSEs (under the contract participation goals) or any sub-contractors

4.12.2 The contractors appointed Construction Manager shall be on site at all times when work is being performed. The Construction Manager will not be permitted to service any other project during the duration of the Contract

5.3.1 The **documentation required** before commencement with Works execution are:

- Health and Safety Plan (refer to Clause 4.3)
- Initial Programme (refer to Clause 5.6)
- Security (refer to Clause 6.2)
- Insurance (refer to Clause 8.6)
- CV(s) of Key Site Staff (refer to Clause 4.11.1)

5.3.2 The **time to submit the documentation** required before commencement with Works is **28 Days**.

5.3.3 Add the following paragraph:

"If a construction work permit, in terms of Clause 3(1) of the Construction Regulations (2014), is applicable, the instruction to commence carrying out of the works may only be issued once the construction work permit has been obtained by the Employer's Agent. If a construction work permit is applicable, the contractor shall allow for a minimum period of 37 days, after the submission (or re-submission) of the documentation referred to in Clause 5.3.1., for the issuing of the construction work permit."

5.4.2 The access and possession of Site shall not be exclusive to the Contractor but as set out in the Site Information.

5.8.1 The **non-working days** are **Saturdays and** Sundays.

(5.1.1) The **special non-working** days are:

- All statutory holidays as declared by National or Regional Government.
- The year-end break:
 - Commencing on the first working day after 15 December.
 - Work resumes on the first working day after 5 January of the next year.

5.8.1 Delete the words "sunset and sunrise" and replace with "17:00 and 07:00".

5.12.2.2 **Abnormal Climatic Conditions (Rain Delays)** - The numbers of days per month, on which work is expected not to be possible as a result of rainfall, for which the Contractor shall make provision, is given in the table below. During the execution of the Works, the Employer's

Agent's Representative will certify a day lost due to rainfall only if at least 75% of the work force and plant on site could not work during that specific working day.

Extension of time as a result of rainfall shall be calculated monthly being equal to the number days certified by the Employer's Agent's Representative as lost due to rainfall, less the number of days allowed for as in table below, which could result in a negative figure for certain months. The total extension of time for which the Contractor may apply, shall be the cumulative algebraic sum of the monthly extensions. Should the sum thus obtained be negative, the extension of time shall be taken as NIL.

<u>Month</u>	<u>Days Lost</u>	<u>Average Rainfall</u>	<u>Month</u>	<u>Days Lost</u>	<u>Average Rainfall</u>
January	4*	134	July	1	39
February	3	113	August	2	62
March	3	120	September	2	73
April	2	73	October	3	98
May	2	59	November	3	108
June	1	28	December	1*	102
TOTAL	27	1009mm	* = The number of working days lost allows for the annual statutory Construction holiday in December and January of each year.		

5.13.1 The **penalty for delay** in failing to complete the Works is **R 3,500.00** (per Day).

5.14.1 The **requirements for achieving Practical Completion** will be determined by the Employer's Agent (in consultation with the Contractor) and recorded in the minutes of the first Site Meeting / Handover Meeting. (Refer to 1.1.1.24 for a generic definition.) The requirements are to be regularly reviewed with respect to any variations to the Contract.

5.16.3 The **latent defect liability** period is **10 Years**.

6.2.1 **Security (Performance Guarantee)**: Delete the word "selected" and replace it with "stated".

The liability of the Performance Guarantee shall be as per the following table:

Value of Contract (incl. VAT)	Performance Guarantee Required
Less than or equal to R 1m	Nil
Greater than R 1m and less than or equal to R 10m	5% of the Contract Sum
Greater than R 10m	10% of the Contract Sum

6.5.1.2.3 The **percentage allowance** to cover overhead charges for daywork are as follows:

- **80%** of the gross remuneration of workmen and foremen actually engaged in the daywork;
- **20%** on the net cost of materials actually used in the completed work.

No allowance will be made for work done, or for materials and equipment for which daywork rates have been quoted at tender stage.

6.8.2 **Contract Price Adjustment Factor:** The value of the certificates issued shall be adjusted in accordance with the Contract Price Adjustment Schedule (GCC 2015 - page 86) with the following Indices / Descriptions / Coefficients:

- The proportion not subject to adjustment: **x = 0.10**.
- The base month will be the month prior to the month in which tenders close.
- The Index for Labour, Plant, and Materials shall be based on **December 2021 = 100**.
- The Index for Fuel shall be based on **December 2020 = 100**.

	STATS SA Statistical Release	Table	Description	Coefficient
• "L" is the "Labour Index"	P0141	Table A	Geographic Indices; CPI per Province; Kwa-Zulu Natal	a = 0.28
• "P" is the "Contractor's Equipment Index"	P0151.1	Table 4	Plant and Equipment	b = 0.28
• "M" is the "Materials Index"	P0151.1	Table 6	Civil Engineering Material (excluding bitumen)	c = 0.38
• "F" is the "Fuel Index"	P0142.1	Table 1	Coke, petroleum, chemical, rubber and plastic products; Coal and petroleum products; Diesel	d = 0.06

6.8.3 Price adjustments for **variation in the cost of the special material(s)** listed below, will be allowed.

Bitumen - escalation will be calculated using the "Rise and Fall" method as determined by the Employer. The base price for bitumen on this contract shall be the ruling price of 50/70 grade bitumen based on the "Shell Whole Sale List Selling Price for Penetration Grade Bitumen", seven (7) days prior to the closing date of tenders.

6.10.1.5 The **percentage advance** on materials not yet built into the Permanent Works is **80%**.

The **percentage advance** on Plant not yet supplied to Site: **State % / Not Required**

6.10.3 **Retention Money:** Delete the word "selected".

The percentage retention on the amounts due to the Contractor is 10%.

The limit of "retention money" is 5% of the Contract Sum.

Should the Contract Price exceed the Contract Sum then the limit of "retention money" is 5% of the Contract Price.

Interest will not be paid on retention withheld by the Employer.

8.6.1.1.2 The **value of Plant and materials** supplied by the Employer to be included in the insurance sum: **Not Required**.

8.6.1.1.3 The **amount to cover professional fees** for repairing damage and loss to be included in the insurance sum: **Not Required**.

8.6.1.2 **SASRIA Coupon Policy** for Special Risks to be issued in joint names of Council and Contractor for the full value of the works (including VAT).

8.6.1.3 The limit of indemnity for **liability insurance: R 10,000,000.00**

8.6.1.4 **Ground Support Insurance:**

- Minimum amount for any one occurrence, unlimited as to the number of occurrences, against any claim for damages or loss caused by vibration and / or removal of lateral support: **R 2,000,000.00**
- Maximum first excess: **R 10,000.00.**

8.6.1.5 Furthermore, the insurance cover effected by the Contractor shall meet the following requirements:

Third Party Insurance (Public Liability)

- Minimum amount for any one occurrence, unlimited as to the number of occurrences, for the period of the contract, inclusive of the maintenance period: **R 1,000,000.00.**
- Consequential loss to be covered by policy: **Yes.**
- Liability section of policy to be extended to cover blasting: **Nil.**
- Maximum excess per claim or series of claims arising out of any one occurrence: **R 20,000.00.**

Principal's own surrounding Property Insurance

- Minimum amount for any one occurrence unlimited as to the number of occurrences against any claim for damage which may occur to the Council's own surrounding property: **R 500,000.00.**
- Maximum first excess: **R 10,000.00**

Insurance of Works

- Minimum amount for additional removal of debris (no damage): **Nil.**
- Minimum amount for temporary storage of materials off site, excluding Contractor's own premises: **Nil.**
- Minimum amount for transit of materials to site: **Nil.**

8.6.5 **Approval by Employer:** At the end of the sub-clause, add the following paragraph:

"Except where otherwise provided in the Special Conditions of Contract, the insurance cover effected by the Contractor in terms of this clause shall not carry a first loss amount greater than those set out below:

Contract Price	First Loss
Less than R 100,000	R 5,000
R 100,000 to R 500,000	R 10,000
R 500,000 to R 1,000,000	R 20,000
R 1,000,000 to R 2,000,000	R 30,000
R 2,000,000 to R 4,000,000	R 40,000
Greater than R 4,000,000	R 50,000

The insurance policy shall contain a specific provision whereby cancellation of the policy prior to the end of the period referred to in Cause 8.2.1 cannot take place without the prior written approval of the Employer."

10.7.1 Failing ad-hoc adjudication, the determination of disputes shall be by arbitration.

C1.2.2.2 DATA TO BE PROVIDED BY CONTRACTOR

1.1.1.9 The legal name of Contractor is:

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1.2.1.2 The Physical address of the Contractor is:

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The Postal address of the Contractor is:

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.....

.....

The contact numbers of the Contractor are:

Telephone:

Fax:

The E-Mail address of the Contractor is:

.....

C1.2.3 ADDITIONAL CONDITIONS OF CONTRACT

C1.2.3.1 COMMUNITY LIAISON OFFICER

The Ward Councillor(s) in whose ward(s) work is to be done will, collectively, identify a community liaison officer (CLO) for the project and make the person known to the Contractor within two days of being requested to do so. The Contractor will be required to enter a written contract with the CLO that specifies:

- The hours of work and the wage rate of the CLO (200% of the Civil Engineering Industry minimum wage).
- The duration of the appointment.
- The duties to be undertaken by the CLO which could include:
 - Assisting in all respects relating to the recruitment of local labour.
 - Acting as a source of information for the community and councillors on issues related to the contract.
 - Keeping the Contractor advised on community issues and issues pertaining to local security.
 - Assisting in setting up any meetings or negotiations with affected parties.
 - Keeping a written record of any labour or community issue that may arise.
 - Any other duties that may be required by the Contractor.

Responsibility for the identification of a pool of suitable labour shall rest with the CLO, although the Contractor shall have the right to choose from that pool. The Contractor shall have the right to determine the total number labourers required at any one time and this may vary during the contract.

The Contractor shall have the right to replace labour that is not performing adequately. Should such occasion arise, it must be done in conjunction with the CLO.

Payment: The contractor will not be reimbursed for the CLO payment. The contractor must allow for CLO payment as a "Sum" item in the Preliminary & General Section of the Bill of Quantities taking cognisance of all statutory requirements such as UIF, SDL etc. The contractor will be required to submit to the Engineer, proof of payment to the CLO and timesheets prior to the processing of monthly payment certificates.

Payment to the CLO will be based on the number of hours worked, i.e. the CLO will be paid for each hour worked instead of a flat monthly rate.

C1.2.3.2 EMPLOYMENT OF LOCAL LABOUR

It is a condition of contract that the contractor will be required to employ local labour as specified in eThekweni Council Policy "The use of CLOs and Local Labour". The contractor will be required to ensure that a minimum of 50% of the labour force is made up of local labour. For the purposes of this contract, "Local labour" will be deemed to be any **persons who reside within the Ward(s) where the work is being undertaken**. It is likely that this project will take place in several wards in Umlazi. The contractor will be required to provide proof of authenticity of local labour. Signed confirmation by the appointed CLO will suffice for this.

No additional costs will be entertained due to this Particular Specification. The contractor will remain responsible for providing proper supervision of all labour and will be responsible for the quality of work produced.

C1.2.3.3 CONTRACTOR PARTICIPATION GOAL (CPG)

It is a condition of contract that the contractor must allow for a minimum of **30%** of the contract value (excluding PC Sum items and Fixed Cost allowances) to be subcontracted to contractors who are >76% PPG (Priority Population Group) owned. The selection of subcontractors shall be approved by the principal contractor with adherence to the sequence and requirements below:

1. Suitable subcontractors shall be selected from the **Ward(s)**, where the project is being undertaken. Based on the nature of the works, it is likely that works will take place in several wards within Umlazi.
2. In the case where there are no suitable subcontractors in the **Ward**, and such is demonstrated by the contractor, the subcontractors may be selected from immediately surrounding Wards.
3. In the case where there are no suitable subcontractors in the **Ward** and surrounding wards, subcontractors shall be selected from the database of service providers kept by eThekweni Municipality.

The Employer's agent will then confirm if the subcontractor is based in the correct Ward and if the requirements of this clause have been adhered to. It is a further condition of contract that the contractor is also required to Supervise, Mentor and Transfer Skills to the selected subcontractors. The contractor will remain responsible for providing proper supervision of all subcontractors and will be responsible for the quality of work produced. Proof of payment to the subcontractors will be required to verify that the minimum CPG requirement has been achieved.

The penalty for not achieving the specified CPG will be 0.5% of the contract value (excluding PC Sum items and Fixed Cost allowances) for every 1% of CPG not achieved.

C1.2.3.4 FTE (Full Time Equivalent) EMPLOYMENT INFORMATION

It is a condition of contract that the Contractor supplies the Employer's Agent's Representative with information in respect of the employment of all foremen, artisans and labour (skilled and unskilled) employed to work on this contract. The information required is:

- Initials (per ID doc)
- Last Name (per ID doc)
- Copy of ID
- Disability (y / n)
- Education Level

Level 1 Unknown	Level 2 No Schooling	Level 3 Grade 1-3	Level 4 Grade 4	Level 5 Grade 5-6
Level 6 Grade 7-8	Level 7 Grade 9	Level 8 Grade 10-11	Level 9 Grade 12	Level 10 Post Matric

- Category of Employment

Category A: Employed as Local Labour for this contract only
Category B: Temporarily employed by the Contractor
Category C: Permanently employed by the Contractor

In addition, the following information is required in respect of each person listed above, on a monthly basis:

- Number of days worked during the month;
- Daily wage rate;
- Number of training days during the month.

The information is to be forwarded in a format acceptable to the Employer's Agent's Representative, but preferably in the form of an emailed EXCEL file (an original file, to be used as a template, will be issued to the Contractor). Contractors without computer facilities will be required to submit a hard copy of the information in a format as agreed to between the Contractor and the Employer's Agent's Representative.

In addition to the tax invoice, to be submitted by the Contractor with his monthly statement, mentioned in Clause 6.10.4 of GCC 2015, the Employer reserves the right to withhold payment until the monthly FTE information has been forwarded to the Employer's Agent's Representative. No additional payment for complying with the above will be made and the Contractor is to make allowance for complying through the time related P & G items (sum) under Part AA: Preliminaries, of the Bill of Quantities.

C1.2.3.5 PERFORMANCE MONITORING OF SERVICE PROVIDERS

The Contractor shall be subjected to "Performance Monitoring" assessments in terms of the applicable Section of the Employer's Supply Chain Management Policy.

Key Performance Indicators (KPIs) are specified in the Part C3: Scope of Works or will be discussed and agreed with the Contractor before commencement of the contract.

C1.2.3.6 EMPOWERMENT STRATEGIES

All strategies outlined in Section C1.2.3.3 are applicable

C1.2.3.7 EXCEPTED RISKS (Clause 8.3)

Pursuant to Clause 8.3 of the Conditions of Contract (GCC 2015), the Employer shall not be liable for the payment of standing time costs as a result of the occurrence of any of the "Excepted Risks" as defined under Clause 8.3.

However, the Employer shall reimburse the Contractor in respect of plant de-establishment and re-establishment costs as a result of "Excepted risks" when a written instruction to de-establish is issued to the Contractor.

C2.1: PRICING ASSUMPTIONS / INSTRUCTIONS

C2.1.1 GENERAL

The Bill of Quantities forms part of the Contract Documents and must be read and priced in conjunction with all the other documents comprising the Contract Documents (refer to F.1.2 of the Tender Data).

C2.1.2 PRICING INSTRUCTIONS AND DESCRIPTION OF ITEMS IN THE SCHEDULE

Measurement and payment shall be in accordance with the relevant provisions of Clause 8 of each of the Standard Engineering Specifications referred to in the Scope of Work. The Preliminary and General items shall be measured in accordance with the provisions of C2.1.8.

The descriptions of the items in the Bill of Quantities are for identification purposes only and comply generally with those in the Standard Engineering Specification.

Clause 8 of each Standard Engineering Specification, read together with the relevant clauses of the Scope of the works, set out what ancillary or associated work and activities are included in the rates for the operations specified. Should any requirements of the measurement and payment clause of the applicable Standard Engineering Specification, or the Scope of the works, conflict with the Bill of Quantities, the requirements of the Standard Engineering Specification or Scope of the work, as applicable, shall prevail.

C2.1.3 QUANTITIES REFLECTED IN THE SCHEDULE

The quantities given in the Bill of Quantities are estimates only, and subject to re-measuring during the execution of the work. The Contractor shall obtain the Employer's Agent's detailed instructions for all work before ordering any materials or executing work or making arrangements for it.

The Works as finally completed in accordance with the Contract shall be measured and paid for as specified in the Bill of Quantities and in accordance with the General and Special Conditions of Contract, the

Specifications and Project Specifications and the Drawings. Unless otherwise stated, items are measured net in accordance with the Drawings, and no allowance has been made for waste.

The validity of the contract will in no way be affected by differences between the quantities in the Bill of Quantities and the quantities finally certified for payment.

C2.1.5 MONTHLY PAYMENTS

Unless otherwise specified in the Specifications and Project Specifications, progress payments in Interim Certificates, referred to in Clause 6.10.1 of the General Conditions of Contract, in respect of "sum" items in the Bill of Quantities shall be by means of interim progress instalments assessed by the Employer's Agent and based on the measure in which the work actually carried out relates to the extent of the work to be done by the Contractor.

C2.1.4 PROVISIONAL SUMS / PRIME COST SUMS

Where Provisional Sums or Prime Cost sums (PC Sum) are provided for items in the Bill of Quantities, payment for the work done under such items will be made in accordance with Clause 6.6 of the General Conditions of Contract. The Employer reserves the right, during the execution of the works, to adjust the stated amounts upwards or downwards according to the work actually done under the item, or the item may be omitted altogether, without affecting the validity of the Contract.

The Tenderer shall not under any circumstances whatsoever delete or amend any of the sums inserted in the "Amount" column of the Bill of Quantities and in the Summary of the Bill of Quantities unless ordered or authorized in writing by the Employer before closure of tenders. Any unauthorized changes made by the Tenderer to provisional items in the schedule, or to the provisional percentages and sums in the Summary of the Bill of Quantities, will be treated as arithmetical errors.

C2.1.6 PRICING OF THE BILL OF QUANTITIES

The prices and rates to be inserted by the Tenderer in the Bill of Quantities shall be the full inclusive prices to be paid by the Employer for the work described under the several items, and shall include full compensation for all costs and expenses that may be required in and for the completion and maintenance during the defects liability period of all the work described and as shown on the drawings as well as all overheads, profits, incidentals and the cost of all general risks, liabilities and obligations set forth or implied in the documents on which the Tender is based.

Each item shall be priced and extended to the "Total" column by the Tenderer, with the exception of the items for which only rates are required (Rate Only), or items which already have Prime Cost or Provisional Sums affixed thereto. If the Contractor omits to price any items in the Bill of Quantities, then these items will be considered to have a nil rate or price.

All items for which terminology such as "inclusive" or "not applicable" have been added by the Tenderer will be regarded as having a nil rate which shall be valid irrespective of any change in quantities during the execution of the Contract.

All rates and amounts quoted in the Bill of Quantities shall be in Rands and Cents and shall include all levies and taxes (other than VAT). VAT will be added in the Summary of the Bill of Quantities.

C2.1.7 "RATE ONLY" ITEMS

The Tenderer shall fill in rates for all items where the words "Rate Only" appear in the "Total" column. "Rate Only" items have been included where:

- (a) an alternative item or material is contemplated;
- (b) variations of specified components in the make-up of a pay item may be expected; and
- (c) no work under the item is foreseen at tender stage but the possibility that such work may be required is not excluded.

For "Rate Only" items no quantities are given in the "Quantity" column but the quoted rate shall apply in the event of work under this item being required. The Tenderer shall however note that in terms of the

Tender Data the Tenderer may be asked to reconsider any such rates which the Employer may regard as unbalanced.

C2.1.8 PRELIMINARY AND GENERAL

The Preliminary and General Section is provided to cover the Contractor's expenses incurred in complying with the requirements of the tender documents and consists of the following parts:

- Part AA: Preliminaries
- Part AB: General Specifications
- Part AH: Occupational Health and Safety

Fixed Charge Items: Each item should be priced separately and, subject to the Engineer certifying in terms of **Clause 6.7 of the General Conditions of Contract** that the work has been done, payment will be made as follows:

- (i) the total amount due when the certified value fixed charge items in this section is less than 5% of the net contract price;
- (ii) when the certified value of fixed charge items in this section is greater than 5% of the net contract price, payment will be limited to 5% of the net contract price. The remainder will be paid when the value of the work done under the contract, excluding the value of fixed charge items in this section, is greater than 50% of the net contract price, excluding the value of fixed charge items in this section.

Time Related Items: Any Time Related items not priced shall be deemed to be covered by the prices of other items in the section.

Payment of Time Related items in this section will be made throughout the contract period, the amount per month being the value of the item divided by the completion in months or, if specified in weeks, the equivalent number of months, in terms of **Clause 5.5 of the General Conditions of Contract**. The final monthly increment will only be paid upon the issue of a completion certificate.

C2.2: BILL OF QUANTITIES

The Bill of Quantities follows and comprises of 41 pages.

INDEX TO BILL OF QUANTITIES**SECTION 1 PRELIMINARY AND GENERAL**

PART	AA	PRELIMINARIES
PART	AB	GENERAL SPECIFICATIONS
PART	AH	OCCUPATIONAL HEALTH and SAFETY

SECTION 2 FOOTPATHS AND ROADWORKS

PART	B	SITE CLEARANCE
PART	C	CONCRETE WORK
PART	DA	EARTHWORKS : BULK
PART	DB	EARTHWORKS FOR PIPE TRENCHES
PART	EB	GRADED CRUSHED STONE
PART	ED	ROAD ASPHALT
PART	EF	KERBS AND HAUNCHES
PART	EG	SIDEWALKS, FOOTPATHS and MEDIAN AREAS
PART	EH	STEEL GUARDRAILS & CONC. MEDIAN BARRIERS
PART	EL	DUMPROCK SUBGRADE IMPROVEMENT
PART	F	PROTECTION WORKS
PART	PG	NON PRESSURE PIPELINES and PC CULVERTS
PART	TA	ROAD SIGNS
PART	TB	ROAD MARKINGS

SECTION 3 STORMWATER DRAINAGE

PART	B	SITE CLEARANCE
PART	C	CONCRETE WORK
PART	DA	EARTHWORKS : BULK
PART	DB	EARTHWORKS FOR PIPE TRENCHES
PART	F	PROTECTION WORKS
PART	PG	NON PRESSURE PIPELINES and PC CULVERTS
PART	PH	MANHOLES and APPURTENANT DRAINAGE WORKS

SECTION 4 SEWERAGE RETICULATION

PART	B	SITE CLEARANCE
PART	C	CONCRETE WORK
PART	DB	EARTHWORKS FOR PIPE TRENCHES
PART	DD	EARTHWORKS FOR STRUCTURES
PART	F	PROTECTION WORKS
PART	PG	NON PRESSURE PIPELINES and PC CULVERTS
PART	PH	MANHOLES and APPURTENANT DRAINAGE WORKS

SECTION 5 RETAINING STRUCTURES - CIVIL WORKS

PART	B	SITE CLEARANCE
PART	C	CONCRETE WORK
PART	DA	EARTHWORKS : BULK
PART	DB	EARTHWORKS FOR PIPE TRENCHES
PART	DD	EARTHWORKS FOR STRUCTURES
PART	F	PROTECTION WORKS
PART	PG	NON PRESSURE PIPELINES and PC CULVERTS

SECTION 6 WATER RETICULATION

PART	B	SITE CLEARANCE
PART	DB	EARTHWORKS FOR PIPE TRENCHES
PART	DD	EARTHWORKS FOR STRUCTURES
PART	PF	PRESSURE PIPELINES : OTHER THAN STEEL

SECTION 7 PLUMBING

PART	PF	PRESSURE PIPELINES : OTHER THAN STEEL
PART	PG	NON PRESSURE PIPELINES and PC CULVERTS
PART	PH	MANHOLES and APPURTENANT DRAINAGE WORKS

CONSTRUCTION OF CIVIL ENGINEERING INFRASTRUCTURE FOR UMLAZI ZONE 2

BILL OF QUANTITIES**SECTION 1 PRELIMINARY AND GENERAL****PART AA PRELIMINARIES**

Item	Clause	Description	Unit	Quantity	Rate	Amount
		<u>GENERAL CONDITIONS OF CONTRACT (GCC2015) READ IN CONJUNCTION WITH CONTRACT DATA</u>				
1	GCC 2015	Fixed Charge obligations	sum	1		
2	GCC 2015	Time Related obligations	sum	1		
		<u>SANS 1921-1: GENERAL ENGINEERING AND CONSTRUCTION WORKS READ IN CONJUNCTION WITH THE ASSOCIATED SPECIFICATION DATA IN THE SCOPE OF WORKS</u>				
3	SANS 1921-1	Fixed Charge Items	sum	1		
4	SANS 1921-1	Time Related Items	sum	1		
5	C.1.2.3.1	Community Liason Officer	PC Sum	300000	1.00	300 000.00
6	C.1.2.3.1	Percentage Adjusted on item 5 for	%	300000		
7	C.1.2.3.4	Submission of monthly FTE's	sum	1		

TOTAL CARRIED TO SECTION 1 SUMMARY: PRELIMINARY AND GENERAL

R

PART AB GENERAL SPECIFICATIONS

Item	Clause	Description	Unit	Quantity	Rate	Amount
		<u>FIXED CHARGES</u>				
1	PS.AB.2	Offices for Engineer and Staff	sum	1		
2	AB.4/PS.14	Contractor's Camp Site / Store Yard	sum	1		
3	AB.5	Notice Board as per standard drawing 40137E	sum	1		
4	AB.7	Initial supply of all signs, barricades and delineators	sum	1		
5	AB.7	Road Deviations	sum	1		
6	PS13.3	Additonal Survey	PC Sum	50000	1.00	50 000.00
7	PS.13.3	Percentage Adjusted for Item 6 for overheads and profit	%	50000		
8	PS.13.1	Survey for, and Preparation of, 'As-Built' Drawings and materials 'As-built'	sum	1		
9	PS.15.3	Deductions for re-tests requested when density of a layer is not as per specification as determined by Acceptance Testing (minus R1000 per set)	set	0		
10	PS.11	Site Security	sum	1		

CONSTRUCTION OF CIVIL ENGINEERING INFRASTRUCTURE FOR UMLAZI ZONE 2

Part Continued **PART** AB GENERAL SPECIFICATIONS

Item	Clause	Description	Unit	Quantity	Rate	Amount
11	PS.24.1	Penalty for not removing unwanted material	day	0		
12		Allow the following additional items which the tenderer requires to be priced separately:- a) <u>TIME RELATED CHARGES</u>	sum	1		
13	PS.AB.2	Offices for Engineer and Staff	sum	1		
14	AB.4	Contractor's Camp Site / Store Yard	sum	1		
15	GCC 2015 4.12	Contractor's Superintendence	sum	1		
16	AB.6	Cost of Samples and Contractor's Preliminary and Site Control Testing	sum	1		
17	AB.7	Maintenance of Pedestrian and Traffic Facilities	sum	1		
18	AB.7	Maintenance of all signs, barricades and delineators	sum	1		
19	PS.11.2	Setting out of works	sum	1		
20	PS.9.3	All work to comply with Environmental Management Plan including all reports, meetings, approvals (etc)	sum	1		
21	PS.11	Site Security	sum	1		
22		Allow the following additional items which the tenderer requires to be priced separately :- a)	sum	1		
23		b)	sum	1		
24		c) <u>Professional Service Providers</u>	sum	1		
25	PS.26	Construction Programme Manager	PC Sum	500000	1.00	500 000.00
26	PS.26	Percentage adjusted on item 25 for overheads and profit	%	500000		
27	PS.26	Civil Engineering Design and Site Supervision	PC Sum	2000000	1.00	2 000 000.00
28	PS.26	Percentage adjusted on item 27 for overheads and profit	%	2000000		
29	PS.26	Townplanner	PC Sum	400000	1.00	400 000.00
30	PS.26	Percentage adjusted on item 29 for overheads and profit	%	400000		

CONSTRUCTION OF CIVIL ENGINEERING INFRASTRUCTURE FOR UMLAZI ZONE 2**Part Continued PART AB GENERAL SPECIFICATIONS**

Item	Clause	Description	Unit	Quantity	Rate	Amount
31	PS.26	Environmental Consultant	PC Sum	300000	1.00	300 000.00
32	PS.26	Percentage adjusted on item 31 for overheads and profit	%	300000		
33	PS.26	Geotechnical Engineering Consultant	PC Sum	300000	1.00	300 000.00
34	PS.26	Percentage adjusted on item 33 for overheads and profit	%	300000		
35	PS.26	Social Facilitator	PC Sum	300000	1.00	300 000.00
36	PS.26	Percentage adjusted on item 35 for overheads and profit	%	300000		
37	PS.26	Surveyor (Land and Engineering)	PC Sum	250000	1.00	250 000.00
38	PS.26	Percentage adjusted on item 37 for overheads and profit	%	250000		

TOTAL CARRIED TO SECTION 1 SUMMARY: PRELIMINARY AND GENERAL**R****PART AH OCCUPATIONAL HEALTH and SAFETY**

Item	Clause	Description	Unit	Quantity	Rate	Amount
1	AH.14.1/C.3.4.3	Contractor's initial obligations in respect of the Occupational Health and Safety Act and Construction Regulations	sum	1		
2	AH.14.2/C.3.4.3	Contractor's time related obligations in respect of the Occupational Health and Safety Act and Construction Regulations	sum	1		
3	AH.14.3/C.3.4.3	Submission of the Health and Safety File	sum	1		

TOTAL CARRIED TO SECTION 1 SUMMARY: PRELIMINARY AND GENERAL**R**

CONSTRUCTION OF CIVIL ENGINEERING INFRASTRUCTURE FOR UMLAZI ZONE 2**SECTION 2 FOOTPATHS AND ROADWORKS****PART B SITE CLEARANCE**

Item	Clause	Description	Unit	Quantity	Rate	Amount
1	B.8.2	General clearance and grubbing in road reserve including trees up to a maximum girth of 1.5m	m2	17200		
2	B.8.4	Removal of trees of girth exceeding 1,5 m	no.	35		
3	PS.19	Removal and relocation of existing dwellings (Not greater than 40m^2)	no.	50		
4	PS.19	Removal and relocation of informal ablution facilities. Rate to include for relocation of the drop pit	no.	55		
5	PS.B.8.13	Demolishing of Concrete Slabs	m3	40		
6	B.8.16	Removal of kerb and haunch/channel to tip	m3	30		
7	B.8.14	Remove existing asphalt roadway to tip	m3	20		
8	PS.B.8.23	Removal and relocation of existing standpipes	no.	50		
9	PS.20	Removal and Relocation of Electric Light Poles(Facilitation Costs)	no.	35		
10	PS.25	Demolition of septic tank systems not greater than 2m3	no.	15		
11	PS28	Removal and relocation of existing VIP toilets	no.	15		
12	PS.B.8.24	Removal of informal retaining structures	m2	400		

TOTAL CARRIED TO SECTION 2 SUMMARY: FOOTPATHS AND ROADWORKS**R****PART C CONCRETE WORK**

Item	Clause	Description	Unit	Quantity	Rate	Amount
1	C.8.1	Grade 40MPa/26mm concrete for Roads - Standard Panels(Class 2 - Broomed Surface Finish)	m3	250		
2	PS.C.8.11	Grade 40MPa/26mm concrete for Roads - Panel Anchors and Anchor Blocks (Class 2 - Broomed Surface Finish)	m3	250		
3	C.8.1	Grade 25MPa/19mm concrete for Footpaths (Class 3 - Wood Float Surface Finish)	m3	400		
4	C.8.1	Grade 20MPa/19mm concrete for Handrail Post Bases and Bollard Bases	m3	20		
5	C.8.2	Welded fabric reinforcement - Ref Mesh 395	t	2.5		

CONSTRUCTION OF CIVIL ENGINEERING INFRASTRUCTURE FOR UMLAZI ZONE 2

Part Continued **PART C CONCRETE WORK**

Item	Clause	Description	Unit	Quantity	Rate	Amount
6	C.8.2	Welded fabric reinforcement - Ref Mesh 193	t	4		
7	C.8.2	High Tensile reinforcement	t	1.5		
8	PS.C.8.5	Movement Joints complete as per Detail B on Drawing D134C.00-UZ2-104-01-T0	m	600		
9	PS.C.8.6	Saw Cut Joints complete as per Detail B on Drawing D134C.00-UZ2-104-01-T0	m	2000		
10	PS.C.8.7	Transverse Joints complete as per Detail I on Drawing D134C.00-UZ2-104-01-T0	m	1000		
11	PS.C.8.8	Isolation Joints complete as per Detail I and K on Drawing D134C.00-UZ2-104-01-T0	m	400		
12	PS.C.8.9	Longitudinal Joints as per Detail I on Drawing D134C.00-UZ2-104-01-T0	m	500		
13	C.8.3	Class 1 Formwork for concrete works	m2	3300		
14	PS.C.8.10	Grade 25MPa/19mm cast insitu Concrete Panels for footpaths 800mm x 800mm x 100mm	no.	50		

TOTAL CARRIED TO SECTION 2 SUMMARY: FOOTPATHS AND ROADWORKS

R

PART DA EARTHWORKS : BULK

Item	Clause	Description	Unit	Quantity	Rate	Amount
1	DA.8.2	Remove topsoil to stockpile for re-use	m3	1250		
2	DA.8.2	Remove 100mm Topsoil to spoil	m3	500		
3	DA.8.3	Excavate in all material, deposit and spread material as fill or stockpile or,if surplus to requirements, spoil in an approved dump site. Rate to include for stockpile handling	m3	7000		
4	DA.8.3	Extra over on item 3 for excavation in intermediate material	m3	650		
5	DA.8.3	Extra over on item 3 for excavation in hard material	m3	400		
6	DA.8.4	Import G4 Material from commercial sources	m3	610		
7	DA.8.4	Import G5 Material from commercial sources	m3	850		
8	DA.8.4	Import G7 Material from commercial sources	m3	2250		
9	DA.8.5	Compact G4 Material to 98% Mod AASTHO	m3	610		
10	DA.8.5	Compact imported G5 Material to 95% Mod AASHTO	m3	850		

CONSTRUCTION OF CIVIL ENGINEERING INFRASTRUCTURE FOR UMLAZI ZONE 2**Part Continued PART DA EARTHWORKS : BULK**

Item	Clause	Description	Unit	Quantity	Rate	Amount
11	DA.8.5	Compact imported G7 Material to 95% Mod AASHTO	m3	2250		
12	DA.8.5	Compact G9 material from scheduled excavation to 93% Mod AASHTO	m3	2000		
13	DA.8.5	Rip and re-compact insitu material to 93% Mod AASHTO	m3	2680		
14	DA.8.6	Trimming of embankments	m2	6000		
15	DA.8.9	Formation	m2	6500		
16	DA.8.9	Extra over item 14 for areas of cut or where the fill layer thickness is less than 150mm	m2	350		

TOTAL CARRIED TO SECTION 2 SUMMARY: FOOTPATHS AND ROADWORKS**R****PART DB EARTHWORKS FOR PIPE TRENCHES**

Item	Clause	Description	Unit	Quantity	Rate	Amount
1	DB.8.5	Excavate and backfill in all material for pipeline up to a maximum diameter of 160mm where depth is:- Over 0,0 m and not exceeding 1,5 m	m	300		
2	DB.8.8	Excavation of unsuitable material from trench bottom and spoil.	m3	100		
3	DB.8.9	Provision of clean coarse sand for pipe trench bedding from commercial or off-site source	m3	350		
4	DB.8.9	Provision of 6.7 mm stone chippings for subsoil drain from commercial or off-site source	m3	180		
5	DB.8.15	Disposal of unsuitable or surplus material including material displaced by pipe from trench excavation	m3	100		

TOTAL CARRIED TO SECTION 2 SUMMARY: FOOTPATHS AND ROADWORKS**R****PART EB GRADED CRUSHED STONE**

Item	Clause	Description	Unit	Quantity	Rate	Amount
1	EB.8.1	150mm G2 base obtained from commercial sources compacted to 98% Mod AASHTO	m3	50		

TOTAL CARRIED TO SECTION 2 SUMMARY: FOOTPATHS AND ROADWORKS**R****PART ED ROAD ASPHALT**

Item	Clause	Description	Unit	Quantity	Rate	Amount
1	PS.ED.8.2	50mm thick Sa-S14 Asphalt Wearing Course road crossings compacted to 93% MTRD	t	3		

CONSTRUCTION OF CIVIL ENGINEERING INFRASTRUCTURE FOR UMLAZI ZONE 2**Part Continued PART ED ROAD ASPHALT**

Item	Clause	Description	Unit	Quantity	Rate	Amount
2	PS.ED.8.2	30mm Thick Sa - S10 asphalt wearing course for new access roads compacted to 93% MTRD	t	75		
3	ED.8.4	Tack Coat of 60% stable-grade emulsion (Application rate 0.3L/m2)	m2	1050		
4	PS.ED.8.5	Prime Coat of MC-30 bitumen (Application rate 0.7L/m2)	m2	1050		

TOTAL CARRIED TO SECTION 2 SUMMARY: FOOTPATHS AND ROADWORKS**R****PART EF KERBS AND HAUNCHES**

Item	Clause	Description	Unit	Quantity	Rate	Amount
1	EF.8.1	Type F Mountable kerb and Cast Insitu Channel as per Drawing 38577	m	2000		
2	EF.8.1	Type D Barrier Kerb with Cast Insitu Channel as per Drawing 38577	m	750		
3	EF.8.1	Type D 1/3 Kerb with Cast Insitu Channel as per Drawing 38577	m	250		
4	EF.8.2	Concrete Haunch for Type F Mountable kerb as per drawing 38577	m	2000		
5	EF.8.2	Concrete Haunch for Type D Barrier kerb as per Drawing 38577	m	750		
6	EF.8.2	Concrete Haunch for Type D 1/3 Kerbing as per Drawing 38577	m	250		

TOTAL CARRIED TO SECTION 2 SUMMARY: FOOTPATHS AND ROADWORKS**R****PART EG SIDEWALKS, FOOTPATHS and MEDIAN AREAS**

Item	Clause	Description	Unit	Quantity	Rate	Amount
1	PS.EG.8.7	Precast Concrete Steps (Figure 1 Kerb) including Grade 20MPa/13mm concrete base as per Drawing 38581	no.	1600		
2	PS.EG.8.8	Handrails as per Drawing 38581	m	600		
3	PS.EG.8.9	Precast Handrail Posts as per Drawing 38581	no.	250		
4	PS.EG.8.10	Precast Concrete Bollards as per Detail C on Drawing D134C.00-UZ2-104-01-T0	no.	20		

TOTAL CARRIED TO SECTION 2 SUMMARY: FOOTPATHS AND ROADWORKS**R****PART EH STEEL GUARDRAILS & CONC. MEDIAN BARRIERS**

Item	Clause	Description	Unit	Quantity	Rate	Amount
1	EH.8.1	Straight steel guard rails as per Drawing 38580	m	200		
2	EH.8.1	Curved steel guard rails as per Drawing 38580	m	250		

CONSTRUCTION OF CIVIL ENGINEERING INFRASTRUCTURE FOR UMLAZI ZONE 2**Part Continued** **PART** **EH STEEL GUARDRAILS & CONC. MEDIAN BARRIERS**

Item	Clause	Description	Unit	Quantity	Rate	Amount
3	EH.8.1	End Wings as per Drawing 38580	m	225		

TOTAL CARRIED TO SECTION 2 SUMMARY: FOOTPATHS AND ROADWORKS

R**PART** **EL DUMPROCK SUBGRADE IMPROVEMENT**

Item	Clause	Description	Unit	Quantity	Rate	Amount
1	EL.8	Dumprock subgrade improvement, 300 mm thick with 8mm crusher dust for roads (Provisional)	m3	135		
2	EL.8	Dumprock subgrade improvement, 300 mm thick for Foothpaths (Provisional)	m3	100		

TOTAL CARRIED TO SECTION 2 SUMMARY: FOOTPATHS AND ROADWORKS

R**PART** **F PROTECTION WORKS**

Item	Clause	Description	Unit	Quantity	Rate	Amount
1	F.8.1	Topsoiling on banks, verges and service lines from stockpile - thickness 100mm	m2	2250		
2	PS.F.8.3	Grass planting on banks, verges and service lines. Rate to include for supply and lay of Cynodon 'Dactylon' grass,fertilizers, pesticides etc..	m2	2250		

TOTAL CARRIED TO SECTION 2 SUMMARY: FOOTPATHS AND ROADWORKS

R**PART** **PG NON PRESSURE PIPELINES and PC CULVERTS**

Item	Clause	Description	Unit	Quantity	Rate	Amount
1	PG.8.11.1	110mm diameter uPVC pipe for cable ducts	m	200		
2	PG.8.11.1	160mm diameter uPVC pipe for cable ducts	m	200		
3	PG.8.12.1	Geotextile blanket as surround to subsoil drainage. (1.6mm thickness, Penetration load = 1.7KN, Porosity = 93%)	m2	725		
4	PG.8.12.2	100 mm diameter pitch fibre sub-soil pipes	m	600		

TOTAL CARRIED TO SECTION 2 SUMMARY: FOOTPATHS AND ROADWORKS

R**PART** **TA ROAD SIGNS**

Item	Clause	Description	Unit	Quantity	Rate	Amount
1	TA.8.1	Supply and erect road sign boards, area not exceeding 2m2 including galvanising	m2	35		
2	TA.8.2	Supply and erect standard 76mm diameter hot dipped galvanised road name sign supports	no.	50		
3	TA.8.3	Excavate and backfill for road sign supports	m3	25		

CONSTRUCTION OF CIVIL ENGINEERING INFRASTRUCTURE FOR UMLAZI ZONE 2Part Continued **PART** TA ROAD SIGNS

Item	Clause	Description	Unit	Quantity	Rate	Amount
4	TA.8.4	Concrete grade 20MPa/19mm for road sign footings	m3	20		

TOTAL CARRIED TO SECTION 2 SUMMARY: FOOTPATHS AND ROADWORKS

R**PART** TB ROAD MARKINGS

Item	Clause	Description	Unit	Quantity	Rate	Amount
1	TB.8.1.1	Road marking paint as per SANS 731 150mm wide (white), including setting out and premarking	km	2.75		
2	TB.8.1.1	Road marking paint as per SANS 731 300mm wide (white), including setting out and premarking	km	2.75		
3	TB.8.1.2	Road marking paint as per SANS 731 for lettering, symbols and traffic islands (white), including setting out lettering, symbols and traffic islands markings	m2	200		

TOTAL CARRIED TO SECTION 2 SUMMARY: FOOTPATHS AND ROADWORKS

R

CONSTRUCTION OF CIVIL ENGINEERING INFRASTRUCTURE FOR UMLAZI ZONE 2**SECTION 3 STORMWATER DRAINAGE****PART B SITE CLEARANCE**

Item	Clause	Description	Unit	Quantity	Rate	Amount
1	B.8.3	General clearance and grubbing for pipelines within a servitude for a width of 2m	m2	3725		

TOTAL CARRIED TO SECTION 3 SUMMARY: STORMWATER DRAINAGE

R

PART C CONCRETE WORK

Item	Clause	Description	Unit	Quantity	Rate	Amount
1	C.8.1	Grade 25MPa/19mm concrete for 750mm wide x 100mm thick 'V' drain	m3	25		
2	C.8.2	Welded fabric reinforcement - Ref: Mesh 193	t	0.5		
3	C.8.3	Class 1 Formwork for concrete 'V' drain	m2	50		

TOTAL CARRIED TO SECTION 3 SUMMARY: STORMWATER DRAINAGE

R

PART DA EARTHWORKS : BULK

Item	Clause	Description	Unit	Quantity	Rate	Amount
1	DA.8.2	Remove 100mm Topsoil to stockpile for re-use	m3	100		
2	DA.8.3	Excavate in all material , deposit and spread material as fill or stockpile or, if surplus to requirements , spoil in an approved dump site. Rate to for stockpiling and handling	m3	200		
3	DA.8.5	Rip and recompact insitu material to 93% MOD AASHTO	m3	100		

TOTAL CARRIED TO SECTION 3 SUMMARY: STORMWATER DRAINAGE

R

PART DB EARTHWORKS FOR PIPE TRENCHES

Item	Clause	Description	Unit	Quantity	Rate	Amount
1	DB.8.4	Remove topsoil to stockpile for re-use	m2	3000		
2	DB.8.4	Remove 150mm topsoil to spoil	m2	725		
3	DB.8.5	Excavate and backfill in all material for 450 mm diameter pipe where depth is :- - Over 0,0 m and not exceeding 1,5 m	m3	500		
4	DB.8.5	Excavate and backfill in all material for 450mm diameter pipe where depth is :- - Over 1,5 m and not exceeding 2,0 m	m3	1600		
5	DB.8.5	Excavate and backfill in all material for 450 mm diameter pipe where depth is :- - Over 2.0 m and not exceeding 2,5 m	m3	1400		
6	DB.8.5	Excavate and backfill in all material for 450 mm diameter pipe where depth is :- - Over 2,5 m and not exceeding 3,0 m	m3	225		

CONSTRUCTION OF CIVIL ENGINEERING INFRASTRUCTURE FOR UMLAZI ZONE 2

Part Continued **PART DB EARTHWORKS FOR PIPE TRENCHES**

Item	Clause	Description	Unit	Quantity	Rate	Amount
7	D.B8.5	Excavate and backfill in all material for 600 mm diameter pipe where depth is :- - Over 1,5 m and not exceeding 2,0 m	m3	100		
8	D.B8.5	Excavate and backfill in all material for 600 mm diameter pipe where depth is :- - Over 2,0 m and not exceeding 2,5 m	m3	50		
9	DB.8.6	Extra over items 3-8 for hard material	m3	550		
10	DB.8.6	Extra over items 3-8 for rock	m3	350		
11	DB.8.8	Excavation of unsuitable material from trench bottom and spoil at tip	m3	120		
12	DB.8.9	Provision of selected fill for pipe bedding from scheduled excavation .	m3	300		
13	DB.8.9	Provision of selected fill for pipe bedding from a commercial or off- site source	m3	350		
14	DB.8.9	Provision of clean coarse sand for pipe bedding from commercial or off-site source	m3	360		
15	DB.8.10	Placing and compacting of Class C bedding for 450mm diameter pipe	m	1375		
16	DB.8.10	Placing and compacting of Class C bedding for 600mm diameter pipe	m3	100		
17	DB.8.9	Provision of 19 mm stone chippings for trench bottom from commercial or off-site source	m3	150		
18	DB.8.13	Provision of backfill material from a commercial source or off site source	m3	200		
19	DB.8.19	Prove existing services by hand excavation (provisional), where depth is: - - Over 0,0 m and not exceeding 1,5 m	m3	100		

TOTAL CARRIED TO SECTION 3 SUMMARY: STORMWATER DRAINAGE

R

PART F PROTECTION WORKS

Item	Clause	Description	Unit	Quantity	Rate	Amount
1	F.8.1	Topsoiling from stockpile as directed by the Engineer - thickness 100mm	m2	600		
2	PS.F.8.3	Grass planting as directed by the Engineer. Rate to include for supply and lay of Cynodon 'Dactylon' grass, fertilizers, pesticides etc.	m2	600		
3	F.8.6	Gabion Mattresses, 300mm thick	m3	100		

TOTAL CARRIED TO SECTION 3 SUMMARY: STORMWATER DRAINAGE

R

CONSTRUCTION OF CIVIL ENGINEERING INFRASTRUCTURE FOR UMLAZI ZONE 2**PART PG NON PRESSURE PIPELINES and PC CULVERTS**

Item	Clause	Description	Unit	Quantity	Rate	Amount
1	PG.8.2	Supply, lay, joint, bed and test 450mm diameter Concrete pipe (50D)	m	500		
2	PG.8.2	Supply, lay, joint, bed and test 450mm450 mm diameter Concrete pipe (100D)	m	125		
3	PG.8.2	Supply, lay, joint, bed and test 450mm diameter HDPE stormwater pipe Class 12.5 PE100 including stainless steel clamps wapped with denso mastic compound	m	500		
4	PG.8.2	Supply, lay, joint, bed and test 600mm diameter HDPE stormwater pipe Class 12.5 PE100 including stainless steel clamps wapped with denso mastic compound	m	75		
5	PG.8.2	Supply, lay, joint, bed and test 450mm diameter HDPE structured wall pipe with rubber seal joint (Pressure rating 1.5 bar, ring stifness 4 KN/m2) or similar approved	m	300		
6	PG.8.5	Grade 15/26 concrete for anchor blocks as per Drawing 38575	no.	100		

TOTAL CARRIED TO SECTION 3 SUMMARY: STORMWATER DRAINAGE

R

PART PH MANHOLES and APPURTENANT DRAINAGE WORKS

Item	Clause	Description	Unit	Quantity	Rate	Amount
1	PS. PH.8.3	Standard inlet manhole type S1. Depth as per standard drawing:38572 Depth :- - Over 0,0 m and not exceeding 1,5 m	no.	10		
2	PS.PH.8.3	Standard inlet manhole type S1. Depth as per standard drawing:38572 Depth :- - Over 1,5 m and not exceeding 2,0 m	no.	10		
3	PS.PH.8.3	Standard inlet manhole type S1. Depth as per standard drawing:38572 Depth :- - Over 2,0 m and not exceeding 2,5 m	no.	5		
4	PS.PH.8.2	Standard Single Stormwater manhole. As per drawing : 38572 Depth :- - Over 0.0m and not exceeding 1.5m	no.	25		
5	PS.PH.8.2	Standard Single Stormwater manhole . As per drawing : 38572 Depth :- - Over 1.5m and not exceeding 2.0m	no.	35		
6	PS.PH.8.2	Standard Single Stormwater manhole. As per drawing : 38572 Depth :- - Over 2.0m and not exceeding 2.5m	no.	25		
7	PS.PH.8.2	Standard Single Stormwater manhole. As per drawing : 38572 Depth :- - Over 2.5m and not exceeding 3.0m	no.	20		

CONSTRUCTION OF CIVIL ENGINEERING INFRASTRUCTURE FOR UMLAZI ZONE 2

Part Continued **PART** PH MANHOLES and APPURTENANT DRAINAGE WORKS

Item	Clause	Description	Unit	Quantity	Rate	Amount
8	PS.PH.8.2	Standard Single Stormwater manhole. As per drawing : 38571 Depth :- - Over 3m and not exceeding 3.5m	no.	5		
9	PS.PH.8.3	Single Splay Stormwater inlet manhole - Right Type S2. As per Drawing : 38572 Depth :- - Over 0.0m and not exceeding 1.5m	no.	20		
10	PS.PH.8.3	Single Splay Stormwater inlet manhole - Right Type S2. As per Drawing : 38572 Depth :- - 1.5m and not exceeding 2.0m	no.	10		
11	PS.PH.8.3	Single Splay Stormwater inlet manhole - Right Type S2. As per Drawing : 38572 Depth :- - 2,0m and not exceeding 2,5m	no.	10		
12	PS.PH.8.3	Double Splay Stormwater inlet manhole - Type D3. As per Drawing:38572 Depth :- - Over 0.0m and not exceeding 1.5m	no.	5		
13	PS.PH.8.3	Double Splay Stormwater inlet manhole - Type D3. As per Drawing:38572 Depth :- - Over 1.5m and not exceeding 2.0m	no.	5		
14	PS.PH.8.3	Double Splay Stormwater inlet manhole - Type D3. As per Drawing:38572 Depth :- - Over 2.0m and not exceeding 2.5m	no.	5		
15	PH.8.2	Extra over item 1-14 for type A channel with 450 x 450mm junction including any change in direction	no.	115		
16	PH.8.2	Extra over item 1-14 for type B benching	no.	100		
17	PH.8.2	Extra over item 1-14 for type A channel with with 600 x 600mm junction including any change in direction	no.	10		
18	PH.8.5.6	Precast Concrete Heavy Duty manhole cover and frame for single stormwater manhole	no.	60		
19	PS.PH.8.5.6	Type 2B Cast Iron cover and frame for single stormwater manhole	no.	10		
20	PS.PH.8.8	Break into existing concrete manhole/culvert wall up to a maximum diameter of 600mm diameter pipe and make good upon completion	no.	10		
21	PS.PH.8.10	Construct Standard inlet headwall for 450mm diameter pipe as per Drawing 38576	no.	10		
22	PS.PH.8.10	Construct Standard outlet headwall for 450mm diameter pipe as per Drawing 38576	no.	30		

CONSTRUCTION OF CIVIL ENGINEERING INFRASTRUCTURE FOR UMLAZI ZONE 2Part Continued **PART** **PH MANHOLES and APPURTENANT DRAINAGE WORKS**

Item	Clause	Description	Unit	Quantity	Rate	Amount
23	PS.PH.8.10	Construct Standard inlet headwall for 600mm diameter pipe as per Drawing 38576	no.	10		
24	PS.PH.8.10	Construct Standard outlet headwall for 600mm diameter pipe as per Drawing 38576	no.	10		
25	PS.PH8.11	110mm Brick Subsoil Drain Headwall	no.	20		

TOTAL CARRIED TO SECTION 3 SUMMARY: STORMWATER DRAINAGE**R**

CONSTRUCTION OF CIVIL ENGINEERING INFRASTRUCTURE FOR UMLAZI ZONE 2**SECTION 4 SEWERAGE RETICULATION****PART B SITE CLEARANCE**

Item	Clause	Description	Unit	Quantity	Rate	Amount
1	B.8.3	General clearance and grubbing for pipelines within a servitude to a width of 2m	m2	23000		

TOTAL CARRIED TO SECTION 4 SUMMARY: SEWERAGE RETICULATION

R

PART C CONCRETE WORK

Item	Clause	Description	Unit	Quantity	Rate	Amount
1	C.8.1	Grade 15MPa/19mm concrete for blinding	m3	15		
2	C.8.1	Grade 25MPa/19mm concrete for pipe bridge columns (Class 3 surface finish)	m3	20		
3	C.8.1	Grade 30MPa/19mm concrete for pipe bridge columns (Class 3 surface finish)	m3	25		
4	C.8.2	High Tensile steel reinforcement	t	2		
5	C.8.3	Class 1 formwork for footings	m2	200		
6	C.8.3	Class 3 formwork for concrete columns and pipe bedding cradle	m2	250		

TOTAL CARRIED TO SECTION 4 SUMMARY: SEWERAGE RETICULATION

R

PART DB EARTHWORKS FOR PIPE TRENCHES

Item	Clause	Description	Unit	Quantity	Rate	Amount
1	DB.8.4	Remove 150mm topsoil to stockpile for re-use	m2	14500		
2	DB.8.4	Remove 150mm topsoil to spoil	m2	2500		
3	DB.8.5	Excavate and backfill in all material where depth is:- Over 0,0 m and not exceeding 1,5 m	m3	3000		
4	DB.8.5	Excavate and backfill in all material where depth is:- Over 1,5 m and not exceeding 2,0 m	m3	4500		
5	DB.8.5	Excavate and backfill in all material where depth is:- Over 2,0 m and not exceeding 2,5 m	m3	1825		
6	DB.8.5	Excavate and backfill in all material where depth is:- Over 2,5 m and not exceeding 3,0 m	m3	425		
7	DB.8.5	Excavate and backfill in all material where depth is:- Over 3,0 m and not exceeding 3,5 m	m3	200		
8	DB.8.6	Extra over items 2-7 for hard material	m3	600		
9	DB.8.6	Extra over items 2-7 for rock	m3	290		

CONSTRUCTION OF CIVIL ENGINEERING INFRASTRUCTURE FOR UMLAZI ZONE 2**Part Continued PART DB EARTHWORKS FOR PIPE TRENCHES**

Item	Clause	Description	Unit	Quantity	Rate	Amount
10	DB.8.9	Provision of selected fill for pipe trench bedding from scheduled excavation.	m3	100		
11	DB.8.9	Provision of selected fill for pipe trench bedding from a commercial or off- site source	m3	250		
12	DB.8.9	Provision of clean coarse sand for pipe trench bedding from commercial sources.	m3	1900		
13	DB.8.13	Provision of 19 mm stone chippings for trench bottom from commercial	m3	490		
14	DB.8.10	Placing and compacting of flexible pipe bedding for 110mm dia. Pipe	m	2000		
15	DB.8.10	Placing and compacting of flexible pipe bedding for 160mm dia. Pipe	m	6750		
16	DB.8.10	Placing and compacting of flexible pipe bedding for 200mm dia. Pipe	m	300		
17	DB.8.10	Placing and compacting of flexible pipe bedding for 250mm dia. Pipe	m	250		
18	DB.8.8	Excavation of unsuitable material from trench bottom and spoil at tip. Rate to include for haulage	m3	225		
19	DB.8.19	Prove existing services by hand excavation (provisional), where depth is: - - Over 0,0 m and not exceeding 1,5 m	m3	380		
20	DB8.13	Import G9 material for backfilling from scheduled excavation and compact to 93% MOD AASHTO	m3	500		

TOTAL CARRIED TO SECTION 4 SUMMARY: SEWERAGE RETICULATION**R****PART DD EARTHWORKS FOR STRUCTURES**

Item	Clause	Description	Unit	Quantity	Rate	Amount
1	DD.8.2	Excavate in all material to stockpile and dispose of surplus material	m3	70		
2	DD.8.2	Extra over item 1 for hard material	m3	30		
3	DD.8.2	Extra over item 1 for hard rock	m3	25		
4	DD.8.3	Backfill and compact material from stockpile to 93% Mod AASHTO	m3	50		

TOTAL CARRIED TO SECTION 4 SUMMARY: SEWERAGE RETICULATION**R****PART F PROTECTION WORKS**

Item	Clause	Description	Unit	Quantity	Rate	Amount
1	F.8.1	Topsoiling from stockpile as directed by the Engineer - thickness 100mm	m2	2300		

CONSTRUCTION OF CIVIL ENGINEERING INFRASTRUCTURE FOR UMLAZI ZONE 2**Part Continued PART F PROTECTION WORKS**

Item	Clause	Description	Unit	Quantity	Rate	Amount
2	PS.F.8.3	Grass planting as directed by the Engineer. Rate to include for supply and lay of Cynodon 'Dactylon' grass, fertilizers, pesticides etc	m2	2300		

TOTAL CARRIED TO SECTION 4 SUMMARY: SEWERAGE RETICULATION**R****PART PG NON PRESSURE PIPELINES and PC CULVERTS**

Item	Clause	Description	Unit	Quantity	Rate	Amount
1	PG.8.2	Supply, lay, joint and bed 110 mm diameter U.P.V.C. heavy duty Class 34 pipe	m	2000		
2	PG.8.2	Supply, lay, joint and bed 160 mm diameter U.P.V.C. heavy duty Class 34 pipe	m	6750		
3	PG.8.2	Supply, lay, joint and bed 200 mm diameter U.P.V.C. heavy duty Class 34 pipe	m	300		
4	PG.8.2	Supply, lay, joint and bed 250 mm diameter U.P.V.C. heavy duty Class 34 pipe	m	250		
5	PG.8.2	Ductile iron Pipe DN 150 with High Alumina Cement Mortar Lining	m	50		
6	PG.8.2	Ductile iron Pipe DN 200 with High Alumina Cement Mortar Lining	m	50		
7	P.G.8.3	Extra over on Item 5 for DN 150 long Radius Ductile iron double socket bend - door back	no.	50		
8	P.G.8.3	Extra over on Item 5 for DN 150 long Radius Ductile iron double socket bend	no.	50		
9	P.G.8.3	Extra over in items 1 and 2 above for Ductile iron pipe bracket DN 150 with 10mm threaded rod as per detail C on drawing D134C.00-UZ2-133-01-TO	no.	100		
10	PS.PG.8.4	House connections complete as per detail B on drawing D134C.00-UZ2-133-01-TO	no.	500		
11	PS.PG.8.14	Connecting into existing pipelines up to maximum diameter of 250mm	no.	30		

TOTAL CARRIED TO SECTION 4 SUMMARY: SEWERAGE RETICULATION**R****PART PH MANHOLES and APPURTENANT DRAINAGE WORKS**

Item	Clause	Description	Unit	Quantity	Rate	Amount
1	PS.PH.8.2	Standard precast concrete ring manhole. Type 1 cover and frame as per drawing 38570 - Over 0,0 m and not exceeding 1,5 m	no.	250		

CONSTRUCTION OF CIVIL ENGINEERING INFRASTRUCTURE FOR UMLAZI ZONE 2

Part Continued **PART** PH MANHOLES and APPURTENANT DRAINAGE WORKS

Item	Clause	Description	Unit	Quantity	Rate	Amount
2	PS.PH.8.2	Standard precast concrete ring manhole. Type 1 cover and frame as per drawing 38570 - Over 1,5 m and not exceeding 2,0 m	no.	300		
3	PS.PH.8.2	Standard precast concrete ring manhole. Type 1 cover and frame as per drawing 38570- Over 2,0 m and not exceeding 2,5 m	no.	100		
4	PS.PH.8.2	Standard precast concrete ring manhole. Type 1 cover and frame as per drawing 38570 - Over 2,5 m and not exceeding 3,0 m	no.	100		
5	PS.PH.8.2	Standard precast concrete ring manhole. Type 1 cover and frame as per drawing 38570 - Over 3,0 m and not exceeding 3,5 m	no.	30		
6	PH.8.2	Extra over item [1-5] for type A channel with 150 x 150mm junction including any change in direction	no.	300		
7	PH.8.2	Extra over item [1-5] for type A channel with 150 x 100mm junction including any change in direction	no.	175		
8	PH.8.2	Extra over item [1-5] for type B benching	no.	310		
9	PH.8.2	Extra over item [1-5] for additional concrete to foundation where outlet grade is greater than 1:10	no.	250		
10	PH.8.4	Ramp junction - depth 0.5 - 1.0m as per drawing 38574	no.	20		
11	PH.8.4	Drop junction - depth up to 1.5m as per drawing 38574	no.	15		
12	PH.8.4	Drop junction - depth 1.5m - 2.0m as per drawing 38574	no.	15		
13	PH.8.5.6	Precast concrete heavy duty manhole cover and frame as per drawing 38570	no.	250		
14	PH.8.5.6	Heavy Duty cast iron manhole cover and frame Type 2A as per drawing 38570	no.	100		
15	PS.PH.8.8	Break into existing concrete manhole up to maximum diameter of 250mm for sewer pipe, connect new pipe and make good upon completion	no.	20		
16	PS.PH.8.9	Testing of manholes - water tightness	no.	60		
17	PS.PF.8.2.10	Pipe Fixing Bracket for 150mm diameter pipe as per detail A on Drawing D134C.00-UZ2-133-01-T0	no.	60		

CONSTRUCTION OF CIVIL ENGINEERING INFRASTRUCTURE FOR UMLAZI ZONE 2Part Continued **PART** **PH MANHOLES and APPURTENANT DRAINAGE WORKS**

Item	Clause	Description	Unit	Quantity	Rate	Amount
18	PS.PF.8.2.10	Pipe Fixing Bracket for 200mm diameter pipe as per detail A on Drawing D134C.00-UZ2-133-01-T0	no.	20		
19	PS.29	Additional Sewer Connections	PC Sum	20000	1.00	20 000.00
20	PS.29	Percentage adjusted on item 19 for overheads and profit	%	20000		

TOTAL CARRIED TO SECTION 4 SUMMARY: SEWERAGE RETICULATION**R**

CONSTRUCTION OF CIVIL ENGINEERING INFRASTRUCTURE FOR UMLAZI ZONE 2**SECTION 5 RETAINING STRUCTURES - CIVIL WORKS****PART B SITE CLEARANCE**

Item	Clause	Description	Unit	Quantity	Rate	Amount
1	B.8.2	General site clearance and grubbing	m2	4607.75		

TOTAL CARRIED TO SECTION 5 SUMMARY: RETAINING STRUCTURES - CIVIL WORKS**R****PART C CONCRETE WORK**

Item	Clause	Description	Unit	Quantity	Rate	Amount
1	C.8.1	Grade 40MPa/19mm concrete in retaining wall bases	m3	300		
2	C.8.1	Grade 30MPa/19mm concrete for retaining wall	m3	150		
3	C.8.1	Grade 25MPa/19mm concrete for brickwall bases and v drains	m3	70		
4	C.8.2	High Tensile Steel reinforcement	t	5		
5	C.8.3	Class 1 Formwork for v drains and walls	m2	400		
6	C.8.3	Class 3 Formwork for concrete retaining walls	m2	800		

TOTAL CARRIED TO SECTION 5 SUMMARY: RETAINING STRUCTURES - CIVIL WORKS**R****PART DA EARTHWORKS : BULK**

Item	Clause	Description	Unit	Quantity	Rate	Amount
1	DA.8.4	Import G7 material from commercial sources	m3	650		
2	DA.8.4	Import G9 material from commercial sources	m3	900		

TOTAL CARRIED TO SECTION 5 SUMMARY: RETAINING STRUCTURES - CIVIL WORKS**R****PART DB EARTHWORKS FOR PIPE TRENCHES**

Item	Clause	Description	Unit	Quantity	Rate	Amount
1	DB.8.9	Provision of clean coarse sand for pipe trench bedding from commercial or off-site source	m3	150		
2	DB.8.9	Provision of 19 mm stone chippings for subsoil drain from commercial or off-site source	m3	150		

TOTAL CARRIED TO SECTION 5 SUMMARY: RETAINING STRUCTURES - CIVIL WORKS**R****PART DD EARTHWORKS FOR STRUCTURES**

Item	Clause	Description	Unit	Quantity	Rate	Amount
1	DD.8.2	Excavate in all material, load, haul, deposit, stockpile or if surplus to requirements or unsuitable spoil in an approved dump site	m3	4000		
2	DD.8.2	Extra over item 1 for hard material	m3	675		

CONSTRUCTION OF CIVIL ENGINEERING INFRASTRUCTURE FOR UMLAZI ZONE 2**Part Continued PART DD EARTHWORKS FOR STRUCTURES**

Item	Clause	Description	Unit	Quantity	Rate	Amount
3	DD.8.2	Extra over item 1 for rock	m3	360		
4	DD.8.5	Backfill G7/G9 material and compact to 93% MOD AASHTO	m3	4750		

TOTAL CARRIED TO SECTION 5 SUMMARY: RETAINING STRUCTURES - CIVIL WORKS**R****PART F PROTECTION WORKS**

Item	Clause	Description	Unit	Quantity	Rate	Amount
1	PS.F.8.9	Supply and construct dry stack retaining wall using Geolok - G400 or similar approved	m2	3500		
2	PS.F.8.10	Soilcrete backfill to walls to achieve a min. UCS of 2 Mpa	m3	400		
3	F.8.6	Gabion boxes : 1000 mm depth	m3	200		
4	PS.F.8.11	200mm dia. No fines blocks including 50mm dia. uPVC Pipe	no.	300		
5	PS.17	Unpacking of existing dry stack walls, set aside to construct service and then re-construct with new concrete base as per Drawing D134C.00-UZ2-208-01-T0 Sheet 1 of 1 Concrete and soilcrete is measured elsewhere	m2	550		
6	F.8.7	230mm brickwork including brick force	m2	175		
7	F.8.7	345mm brickwork including brick force	m2	150		

TOTAL CARRIED TO SECTION 5 SUMMARY: RETAINING STRUCTURES - CIVIL WORKS**R****PART PG NON PRESSURE PIPELINES and PC CULVERTS**

Item	Clause	Description	Unit	Quantity	Rate	Amount
1	PG.8.12.1	Geotextile blanket for gabion baskets(2.3mm thick, Penetration load = 2.5KN, Porosity = 93%)	m2	1950		
2	PG.8.12.1	Geotextile blanket as surround to Subsoil Drains (1.6mm thick, Penetration load = 1.7KN, Porosity = 93%)	m2	750		
3	PG.8.12.2	110mm diameter pitch fibre sub-soil pipes	m	350		

TOTAL CARRIED TO SECTION 5 SUMMARY: RETAINING STRUCTURES - CIVIL WORKS**R**

CONSTRUCTION OF CIVIL ENGINEERING INFRASTRUCTURE FOR UMLAZI ZONE 2**SECTION 6 WATER RETICULATION****PART B SITE CLEARANCE**

Item	Clause	Description	Unit	Quantity	Rate	Amount
1	B.8.3	General clearance and grubbing for pipelines within a servitude	m2	2000		

TOTAL CARRIED TO SECTION 6 SUMMARY: WATER RETICULATION

R**PART DB EARTHWORKS FOR PIPE TRENCHES**

Item	Clause	Description	Unit	Quantity	Rate	Amount
1	DB.8.4	Remove 150mm topsoil to stockpile and re-use	m2	750		
2	DB.8.4	Remove 150mm topsoil to spoil	m2	1000		
3	DB.8.5	Excavate and backfill in all material where depth is:- - Over 0,0 m and not exceeding 1,5 m	m3	2000		
4	DB.8.5	Excavate and backfill in all material where depth is:- - Over 1,5 m and not exceeding 2,0 m	m3	600		
5	DB.8.6	Extra over item [3-4] for hard material	m3	360		
6	DB.8.6	Extra over item [3-4] for rock	m3	260		
7	DB.8.9	Provision of selected fill for pipe bedding from scheduled excavation	m3	300		
8	DB.8.9	Provision of selected fill for pipe bedding from a commercial or off-site source	m3	100		
9	DB.8.9	Provision of clean coarse sand for pipe bedding from commercial or off-site source	m3	530		
10	DB.8.9	Provision of 19 mm stone material for pipe bedding from commercial or off-site source	m3	50		
11	DB.8.10	Placing and compacting of flexible pipe bedding for 50mm diameter pipe	m	810		
12	DB.8.10	Placing and compacting of flexible pipe bedding for 63mm diameter pipe	m	540		
13	DB.8.10	Placing and compacting of flexible pipe bedding for 75mm diameter pipe	m	500		
14	DB.8.10	Placing and compacting of flexible pipe bedding for 110mm diameter pipe	m	550		
15	DB.8.10	Placing and compacting of flexible pipe bedding for 160mm diameter pipe	m	300		
16	DB.8.8	Excavation of unsuitable material from trench bottom and spoil	m3	100		

CONSTRUCTION OF CIVIL ENGINEERING INFRASTRUCTURE FOR UMLAZI ZONE 2

Part Continued **PART DB EARTHWORKS FOR PIPE TRENCHES**

Item	Clause	Description	Unit	Quantity	Rate	Amount
17	DB.8.19	Prove existing services by hand excavation (provisional), where depth is: - - Over 0,0 m and not exceeding 1,5 m	m3	50		

TOTAL CARRIED TO SECTION 6 SUMMARY: WATER RETICULATION

R

PART DD EARTHWORKS FOR STRUCTURES

Item	Clause	Description	Unit	Quantity	Rate	Amount
1	DD.8.1	Excavate in all material for structures including chambers to stockpile and dispose of surplus material	m3	175		
2	DD.8.2	Extra over item 1 for hard material	m3	45		
3	DD.8.2	Extra over item 1for rock	m3	30		
4	DD.8.3	Backfill and compact material from stockpile to 93% Mod AASHTO	m3	100		

TOTAL CARRIED TO SECTION 6 SUMMARY: WATER RETICULATION

R

PART PF PRESSURE PIPELINES : OTHER THAN STEEL

Item	Clause	Description	Unit	Quantity	Rate	Amount
1	PF.8.2.1	Supply, Lay, joint,bed and disinfect 50mm diameter HDPE Class PN 12.5 Pipe(SANS ISO 4427)complete with couplings	m	810		
2	PF.8.2.1	Supply, Lay, joint,bed and disinfect 63mm diameter HDPE Class PN 12.5 Pipe(SANS ISO 4427)complete with couplings	m	540		
3	PF.8.2.1	Supply, Lay, joint,bed and disinfect 75mm diameter mPVC Class 12 pipe (SANS 966-1) complete with couplings	m	500		
4	PF.8.2.1	Supply, Lay, joint,bed and disinfect 110mm diameter mPVC Class 12 Pipe (SANS 966-1)complete with couplings	m	550		
5	PF.8.2.1	Supply, Lay, joint,bed and disinfect 160mm diameter mPVC Class 12 Pipe (SANS 966-1)complete with couplings	m	300		
		<u>Supply and Install Bitumen dipped Cast Iron Bends for mPVC pipes (Class 12) to SABS 546 160 dia. X 45 deg</u>				
6	PF.8.2.2	160 dia. X 90 deg	no.	5		
7	PF.8.2.2	160 dia. X 45 deg	no.	5		
8	PF.8.2.2	160 dia. X 22.5deg	no.	5		
9	PF.8.2.2	110 dia. X 90 deg	no.	10		
10	PF.8.2.2	110dia. X 45 deg	no.	10		

CONSTRUCTION OF CIVIL ENGINEERING INFRASTRUCTURE FOR UMLAZI ZONE 2

Part Continued **PART** PF PRESSURE PIPELINES : OTHER THAN STEEL

Item	Clause	Description	Unit	Quantity	Rate	Amount
11	PF.8.2.2	110 dia. X 22.5 deg	no.	10		
12	PF.8.2.2	75 dia. X 90 deg	no.	10		
13	PF.8.2.2	75 dia. X 45 deg	no.	10		
		<u>Supply and Install Compression Elbows for HDPE Pipes (Class 16) to SABS 533:</u>				
14	PF.8.2.2	63 dia. X 90 deg	no.	20		
15	PF.8.2.2	50 dia. X 90 deg	no.	35		
		<u>Supply and Install Bitumen dipped Cast Iron Reducers for mPVC pipes (Class 16) to SABS 546:</u>				
16	PF.8.2.2	160 dia. X 110mm dia	no.	15		
17	PF.8.2.2	110 dia x 75mm dia	no.	15		
18	PF.8.2.2	Supply and Install 63mm Ø x 50mm Ø Compression Reducers for HDPE Pipes (Class 16) to SABS 533	no.	20		
		<u>Supply and Install Bitumen Dipped Cast Iron Adaptors for mPVC Pipes (Class 16) to SABS 533:</u>				
19	PF.8.2.2	75mm dia x 2.5" dia Female	no.	15		
20	PF.8.2.2	75mm dia x 2.5" dia Male	no.	15		
21	PF.8.2.2	75mm dia x 2" dia. Female	no.	20		
22	PF.8.2.2	75mm dia x 2" dia. Male	no.	20		
		<u>Supply and Install Compression Adaptors for HDPE Pipes (Class 16) to SABS 533:</u>				
23	PF.8.2.2	63mm dia x 2.5" dia Female	no.	15		
24	PF.8.2.2	63mm dia x 2.5" dia Male	no.	15		
25	PF.8.2.2	50mm dia x 2" dia. Female	no.	20		
26	PF.8.2.2	50mm dia x 2" dia. Male	no.	20		
		<u>Supply and Install Bitumen Dipped Cast Iron Socketed Tees for mPVC Pipes (Class 16) to SABS 533:</u>				
27	PF.8.2.2	160mm dia x 110mm dia.	no.	10		
28	PF.8.2.2	160mm dia x 75mm dia.	no.	10		
29	PF.8.2.2	110mm dia x 110mm dia.	no.	10		
30	PF.8.2.2	110mm dia x 75mm dia.	no.	15		
31	PF.8.2.2	75mm dia x 75mm dia.	no.	20		

CONSTRUCTION OF CIVIL ENGINEERING INFRASTRUCTURE FOR UMLAZI ZONE 2

Part Continued **PART** PF PRESSURE PIPELINES : OTHER THAN STEEL

Item	Clause	Description	Unit	Quantity	Rate	Amount
		<u>Supply and Install Compression Tees for HDPe Pipes (Class 16) to SABS 533:</u>				
32	PF.8.2.2	63mm dia x 63mm dia.	no.	15		
33	PF.8.2.2	63mm dia x 50mm dia.	no.	15		
34	PF.8.2.2	50mm dia x 50mm dia.	no.	10		
		<u>Supply and Install Polypropylene Clamp Saddle with Stainless Steel Reinforcing Ring (Class 16):</u>				
35	PF.8.2.2	160mm dia x 2.5" dia Female	no.	20		
36	PF.8.2.2	160mm dia x 2" dia Female	no.	20		
37	PF.8.2.2	110mm dia x 2.5" dia Female	no.	20		
38	PF.8.2.2	110mm dia x 2" dia Female	no.	20		
39	PF.8.2.2	75mm dia x 2.5" dia Female	no.	45		
40	PF.8.2.2	75mm dia x 2" dia Female	no.	45		
41	PF.8.2.2	Compression End Caps for HDPE Pipe	no.	25		
42	PF.8.2.3	Collect 150mm Ø Flanged RSV Gate valve (Class 16) from EWS Springfield Park Stores or within a 40km radius from this location and install.	no.	10		
43	PF.8.2.3	Collect 100mm Ø Flanged RSV Gate valve (Class 16) from EWS Springfield Park Stores or within a 40km radius from this location and install	no.	20		
44	PF.8.2.3	Collect 80mm Ø Flanged RSV Gate valve (Class 16) from EWS Springfield Park Stores or within a 40km radius from this location and install	no.	35		
45	PF.8.2.3	Collect 50mm Ø Flanged RSV Gate valve (Class 16) from EWS Springfield Park Stores or within a 40km radius from this location and install	no.	35		
46	PF8.2.3	Supply all materials for fire hydrant assembly as per Plan No. 51B (Valve and No. 5 valve cover to be collected from the Ethekwini Water Springfield Park Store or within a 40km radius from this location)	no.	15		

CONSTRUCTION OF CIVIL ENGINEERING INFRASTRUCTURE FOR UMLAZI ZONE 2Part Continued **PART** PF PRESSURE PIPELINES : OTHER THAN STEEL

Item	Clause	Description	Unit	Quantity	Rate	Amount
47	PF.8.2.3	Assemble and install single hydrant unit off 110mm Ø mPVC main complete as per detail on Plan No. 51B. Rate to include for all excavation, scour tee, gate valve chamber, thrust blocks, duckfoot bend, fittings and specials, hydrant, backfilling etc. (Note: gate valve, hydrant assembly & cover	no.	15		
48	PF.8.2.6	Construct Isolation Valve Chamber for 160mm Ø mPVC pipe, complete as per Plan No. 117 to a maximum depth of 1.5 m (Note: valve and cover supplied by council)	no.	10		
49	PF.8.2.6	Construct Isolation Valve Chamber for 110mm Ø mPVC pipe, complete as per Plan No. 117 to a maximum depth of 1.5 m (Note: valve and cover supplied by council)	no.	10		
50	PF.8.2.6	Construct Isolation Valve Chamber for 75mm Ø mPVC pipe, complete as per Plan No. 117 to a maximum depth of 1.5 m (Note: valve and cover supplied by council)	no.	35		
51	PF.8.2.6	Construct Isolation Valve Chamber for 63 / 50mm Ø HDPE pipe, complete as per Plan No. 117 to a maximum depth of 1.5 m (Note: valve and cover supplied by council).	no.	35		
52	PF.8.2.7	Supply, deliver, paint and install precast concrete valve marker posts - including stencilling.	no.	85		
53	PF.8.2.7	Grade 15/26 Concrete for Thrust Blocks including for all formwork, protective pipe wrapping etc.	m3	50		
54	PF.8.2.9	Test pipeline including all hydrant assemblies and connections for - 50mm dia. Pipe	m	810		
55	PF.8.2.9	Test pipeline including all hydrant assemblies and connections for - 63mm dia. Pipe	m	540		
56	PF.8.2.9	Test pipeline including all hydrant assemblies and connections for - 75mm dia. Pipe	m	500		
57	PF.8.2.9	Test pipeline including all hydrant assemblies and connections for - 110mm dia. Pipe	m	550		
58	PF.8.2.9	Test pipeline including all hydrant assemblies and connections for - 160mm dia. Pipe	no.	300		

CONSTRUCTION OF CIVIL ENGINEERING INFRASTRUCTURE FOR UMLAZI ZONE 2Part Continued **PART** **PF** **PRESSURE PIPELINES : OTHER THAN STEEL**

Item	Clause	Description	Unit	Quantity	Rate	Amount
59	PS.PF.8.2.12	Tie-in to existing watermain at closed valve supplied by the Council for - 75mm dia. Pipe	PC Sum	15000	1.00	15 000.00
60	PS.PF.8.2.11	Percentage adjusted for item 59 for overheads and profit	%	15000		
61	PS.PF.8.2.12	Tie-in to existing watermain at closed valve supplied by the Council for - 110mm dia. Pipe	PC Sum	15000	1.00	15 000.00
62	PS.PF.8.2.11	Percentage adjusted for item 61 for overheads and profit	%	15000		
63	PS.PF.8.2.12	Tie-in to existing watermain at closed valve supplied by the Council for - 160mm dia. Pipe	PC Sum	10000	1.00	10 000.00
64	PS.PF.8.2.11	Percentage adjusted for item 63 for overheads and profit	%	10000		
65	PS.PF.8.2.11	Ancillary Infrastructure	PC Sum	300000	1.00	300 000.00
66	PS.PF.8.2.11	Percentage adjusted for item 65 for overheads and profit	%	300000		

TOTAL CARRIED TO SECTION 6 SUMMARY: WATER RETICULATION**R**

CONSTRUCTION OF CIVIL ENGINEERING INFRASTRUCTURE FOR UMLAZI ZONE 2**SECTION 7 PLUMBING****PART PF PRESSURE PIPELINES : OTHER THAN STEEL**

Item	Clause	Description	Unit	Quantity	Rate	Amount
1	PF.8.2.1	15mm Class 12 Polycop polypropylene pipe fixed to walls, ceilings, roofs or floors	m	1500		
2	PF.8.2.1	28mm Class 12 Polycop polypropylene pipe fixed to walls, ceilings, roofs or floors	m	1500		
3	PF.8.2.1	15mm Class 12 Polycop polypropylene wrapped in kraft paper chased in walls	m	250		
4	PF.8.2.1	28mm Class 12 Polycop polypropylene wrapped in kraft paper chased in walls	m	250		
5	PF.8.2.2	Extra Over item 1 for 15mm compression fitting	no.	1500		
6	PF.8.2.2	Extra Over item 2 for 28mm compression fitting	no.	1500		
7	PF.8.2.2	Splashworks 15mm chrome male to female lever type ballostop (code: BCCP)	no.	250		
8	PF.8.2.2	Braided Connector Pipe for toilet cisterns	no.	1000		
9	PF.8.2.2	Cobra Watertech Capstan 15mm pillar tap with flanged backnut in chrome (Code: CS-212-15CP), manufactured in accordance with SANS 226:2004 Type 2 (BS 5412).	no.	250		
10	PF.8.2.2	Cobra Watertech 15mm x 50mm diameter chrome plated Concorde shower head with ball-jointed connector (Code: 068BJ).	no.	250		
11	PF.8.2.2	Cobra Watertech 15mm x 380mm projection chrome plated overhead shower arm with wall flange (Code: 029).	no.	250		
12	PF.8.2.2	Cobra Watertech Star 15mm wall mounted exposed shower mixer with adjustable wall flanges (Code: 181), manufactured in accordance with SANS 226:2004 Type 1 (BS 5412).	no.	250		
13	PF.8.2.9	Allow for testing the whole of the plumbing and drainage installation to the approval of the engineer	sum	1		

TOTAL CARRIED TO SECTION 7 SUMMARY: PLUMBING

R

PART PG NON PRESSURE PIPELINES and PC CULVERTS

Item	Clause	Description	Unit	Quantity	Rate	Amount
1	PG.8.2	50mm diameter uPVC Pipe fixed to walls, ceilings, roofs, floors or laid in filling	m	1500		

CONSTRUCTION OF CIVIL ENGINEERING INFRASTRUCTURE FOR UMLAZI ZONE 2**Part Continued PART PG NON PRESSURE PIPELINES and PC CULVERTS**

Item	Clause	Description	Unit	Quantity	Rate	Amount
2	PG.8.2	50mm diameter Pipe Cast in Concrete	m	250		
3	PG.8.2	50mm diameter Junction	no.	1000		
4	PG.8.2	50mm diameter Pipe Chased in walls	m	250		
5	PG.8.3	50mm diameter Bend with Access heel 45 degrees	no.	500		
6	PG.8.3	50mm Sewer two-way vent valve	no.	500		
7	PG.8.3	110mm diameter Reducing junction	no.	500		
8	PG.8.3	110mm Access Junction with Cleaning Eye	no.	500		
9	PG.8.3	110mm diameter Bent Pan connector	no.	500		

TOTAL CARRIED TO SECTION 7 SUMMARY: PLUMBING**R****PART PH MANHOLES and APPURTENANT DRAINAGE WORKS**

Item	Clause	Description	Unit	Quantity	Rate	Amount
1	PS.PH.8.11	Atlast Plastics rotomoulded polyethelene single bowl sink with galvanised brackets(code:321AP). Size 1000mm x 460mm wide with 40mm waste outlet, plugged and screwed to the wall with galvanised screws and fixing brackets	no.	500		
2	PS.PH.8.11	W.C. suite as 'Vaal Sanitaryware' Afsan Aquasave slimline low level suite product code 756599 or other equal and approved comprising vitreous china 90 degree outlet washdown pan and 4 litre SISO polypropylene top flush cistern complete with lid, fitments and flushpipe including fixing pan to floor and cistern to wall in accordance with manufacturers instruction and fitted with heavy duty plastic doouble flap seat and cover	no.	500		
3	PS.PH.8.11	32 x 38mm Flexible rubber re-seal 'P' or 'S' - traps	no.	500		
4	PS.PH.8.11	40mm Rough brass shower 'P'-trap as 'Cobra Watertech' Ref. No. 373 or other equal and approved with chromium plated grating.	no.	500		
5	PS.PH.8.11	White Silicone non hardening sealing compound in pointing and sealing around wash hnd basins, sinks etc at junction with fair faced wall, tiles, etc.	m	500		
6	PS.27	Ancillary Fittings	PC Sum	25000	1.00	25 000.00

CONSTRUCTION OF CIVIL ENGINEERING INFRASTRUCTURE FOR UMLAZI ZONE 2

Part Continued PART PH MANHOLES and APPURTENANT DRAINAGE WORKS

Item	Clause	Description	Unit	Quantity	Rate	Amount
7	PS.27	Percentage adjusted for item 6 for overheads and profit	%	25000		

TOTAL CARRIED TO SECTION 7 SUMMARY: PLUMBING R

BILL OF QUANTITIES SECTION SUMMARY

SECTION 1 PRELIMINARY AND GENERAL

PART	AA	PRELIMINARIES	
PART	AB	GENERAL SPECIFICATIONS	
PART	AH	OCCUPATIONAL HEALTH and SAFETY	
TOTAL CARRIED TO FINAL SUMMARY			

BILL OF QUANTITIES SECTION SUMMARY**SECTION 2 FOOTPATHS AND ROADWORKS**

PART B	SITE CLEARANCE	
PART C	CONCRETE WORK	
PART DA	EARTHWORKS : BULK	
PART DB	EARTHWORKS FOR PIPE TRENCHES	
PART EB	GRADED CRUSHED STONE	
PART ED	ROAD ASPHALT	
PART EF	KERBS AND HAUNCHES	
PART EG	SIDEWALKS, FOOTPATHS and MEDIAN AREAS	
PART EH	STEEL GUARDRAILS & CONC. MEDIAN BARRIERS	
PART EL	DUMPROCK SUBGRADE IMPROVEMENT	
PART F	PROTECTION WORKS	
PART PG	NON PRESSURE PIPELINES and PC CULVERTS	
PART TA	ROAD SIGNS	
PART TB	ROAD MARKINGS	
TOTAL CARRIED TO FINAL SUMMARY		

BILL OF QUANTITIES SECTION SUMMARY**SECTION 3 STORMWATER DRAINAGE**

PART B	SITE CLEARANCE	
PART C	CONCRETE WORK	
PART DA	EARTHWORKS : BULK	
PART DB	EARTHWORKS FOR PIPE TRENCHES	
PART F	PROTECTION WORKS	
PART PG	NON PRESSURE PIPELINES and PC CULVERTS	
PART PH	MANHOLES and APPURTENANT DRAINAGE WORKS	
TOTAL CARRIED TO FINAL SUMMARY		

BILL OF QUANTITIES SECTION SUMMARY**SECTION 4 SEWERAGE RETICULATION**

PART B	SITE CLEARANCE	
PART C	CONCRETE WORK	
PART DB	EARTHWORKS FOR PIPE TRENCHES	
PART DD	EARTHWORKS FOR STRUCTURES	
PART F	PROTECTION WORKS	
PART PG	NON PRESSURE PIPELINES and PC CULVERTS	
PART PH	MANHOLES and APPURTENANT DRAINAGE WORKS	
TOTAL CARRIED TO FINAL SUMMARY		

BILL OF QUANTITIES SECTION SUMMARY**SECTION 5 RETAINING STRUCTURES - CIVIL WORKS**

PART B	SITE CLEARANCE	
PART C	CONCRETE WORK	
PART DA	EARTHWORKS : BULK	
PART DB	EARTHWORKS FOR PIPE TRENCHES	
PART DD	EARTHWORKS FOR STRUCTURES	
PART F	PROTECTION WORKS	
PART PG	NON PRESSURE PIPELINES and PC CULVERTS	
TOTAL CARRIED TO FINAL SUMMARY		

BILL OF QUANTITIES SECTION SUMMARY**SECTION 6 WATER RETICULATION**

PART B	SITE CLEARANCE	
PART DB	EARTHWORKS FOR PIPE TRENCHES	
PART DD	EARTHWORKS FOR STRUCTURES	
PART PF	PRESSURE PIPELINES : OTHER THAN STEEL	
TOTAL CARRIED TO FINAL SUMMARY		

BILL OF QUANTITIES SECTION SUMMARY**SECTION 7 PLUMBING**

PART	PF	PRESSURE PIPELINES : OTHER THAN STEEL	
PART	PG	NON PRESSURE PIPELINES and PC CULVERTS	
PART	PH	MANHOLES and APPURTENANT DRAINAGE WORKS	
TOTAL CARRIED TO FINAL SUMMARY			

SUMMARY OF BILL OF QUANTITIES**Section**

1	PRELIMINARY AND GENERAL		R	
AA	PRELIMINARIES	R		
AB	GENERAL SPECIFICATIONS	R		
AH	OCCUPATIONAL HEALTH and SAFETY	R		
2	FOOTPATHS AND ROADWORKS		R	
B	SITE CLEARANCE	R		
C	CONCRETE WORK	R		
DA	EARTHWORKS : BULK	R		
DB	EARTHWORKS FOR PIPE TRENCHES	R		
EB	GRADED CRUSHED STONE	R		
ED	ROAD ASPHALT	R		
EF	KERBS AND HAUNCHES	R		
EG	SIDEWALKS, FOOTPATHS and MEDIAN AREAS	R		
EH	STEEL GUARDRAILS & CONC. MEDIAN BARRIERS	R		
EL	DUMPROCK SUBGRADE IMPROVEMENT	R		
F	PROTECTION WORKS	R		
PG	NON PRESSURE PIPELINES and PC CULVERTS	R		
TA	ROAD SIGNS	R		
TB	ROAD MARKINGS	R		
3	STORMWATER DRAINAGE		R	
B	SITE CLEARANCE	R		
C	CONCRETE WORK	R		
DA	EARTHWORKS : BULK	R		
DB	EARTHWORKS FOR PIPE TRENCHES	R		
F	PROTECTION WORKS	R		
PG	NON PRESSURE PIPELINES and PC CULVERTS	R		
PH	MANHOLES and APPURTENANT DRAINAGE WORKS	R		
4	SEWERAGE RETICULATION		R	
B	SITE CLEARANCE	R		
C	CONCRETE WORK	R		
DB	EARTHWORKS FOR PIPE TRENCHES	R		
DD	EARTHWORKS FOR STRUCTURES	R		
F	PROTECTION WORKS	R		
PG	NON PRESSURE PIPELINES and PC CULVERTS	R		
PH	MANHOLES and APPURTENANT DRAINAGE WORKS	R		
5	RETAINING STRUCTURES - CIVIL WORKS		R	
B	SITE CLEARANCE	R		
C	CONCRETE WORK	R		
DA	EARTHWORKS : BULK	R		
DB	EARTHWORKS FOR PIPE TRENCHES	R		

Section

DD	EARTHWORKS FOR STRUCTURES	R	
F	PROTECTION WORKS	R	
PG	NON PRESSURE PIPELINES and PC CULVERTS	R	
6	WATER RETICULATION	R	
B	SITE CLEARANCE	R	
DB	EARTHWORKS FOR PIPE TRENCHES	R	
DD	EARTHWORKS FOR STRUCTURES	R	
PF	PRESSURE PIPELINES : OTHER THAN STEEL	R	
7	PLUMBING	R	
PF	PRESSURE PIPELINES : OTHER THAN STEEL	R	
PG	NON PRESSURE PIPELINES and PC CULVERTS	R	
PH	MANHOLES and APPURTENANT DRAINAGE WORKS	R	
SUB TOTAL			R
ADD VAT (15%) - (only if a registered VAT Vendor)			R
TOTAL CARRIED TO FORM OF TENDER			R

PART C3: SCOPE OF WORK

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C3.1: PROJECT DESCRIPTION AND SCOPE OF CONTRACT

C3.1.1 Description of Works

- **Extent of Services**

The broad extent of the works for this contract will include, but is not limited to, the following:

Type of Works	Description of Works
Site Clearance	General clearance including the removal of vegetation, concrete slabs, kerbs, formal/informal ablution facilities etc.
Footpaths	Approximate total length = 2500m. 100mm Thick Concrete Footpaths (25MPa/19mm), reinforced with Mesh Ref. 193 will be constructed on a 150mm in situ layer, ripped and recompacted to 93% of MDD.
Sewer	Approximate total length = 9300m. Sewer Manholes and 160mm dia./110mm dia. (Heavy Duty Class 34) pipelines as well as standard house connections.
Storm Drainage	Approximate total length of pipelines = 1500m. Manholes, Inlets, Concrete and HDPE Pipelines, 'V' Drains, Headwalls etc. shall form part of the drainage works.
Roadworks	Approximate total length = 1350m. Reinforced Concrete and Asphalt surfaced roads will be constructed as indicated on the contract drawings.
Protection Works	Approximate area of retaining structures = 3500m ² The following types of retaining structures may need to be constructed: • Dry Stack Retaining Blocks – Geolok G400 or similar approved • Gabion Retaining Walls • Reno Mattresses • Reinforced Concrete Walls
Water Infrastructure	Approximate total length of pipelines = 2300m Water pipelines (HDPE & mPVC) including associated valves and fittings will be constructed as part of this contract.
Ablution Works	Toilet and Shower facilities as well as associated infrastructure will be provided where directed.

- **Co-operation with other Service Providers**

All interaction with various departments such as Water and Sanitation, Electricity, Telkom and Neotel are to run parallel to construction works should any of the above services be affected.

- **Approvals**

The contractor is to obtain approval in writing from the Engineer prior to commencing any works that deviate from drawings and/or specifications.

- **Access to land/buildings/sites**

The Contractor's attention is drawn to the fact that newly constructed structures may be encountered upon establishment on site. Should there be any obstructions encountered, the Contractor shall notify the Engineer prior to commencing any further works.

- **Software Application for Programming**

For ease of submission and uniformity, it is a requirement that the construction programme shall be prepared by the successful tenderer using *Microsoft Project*.

- **Quality Management**

The successful tenderer shall implement specific quality control measures to ensure that the works are constructed as per the standard specifications, project specifications and construction drawings. The Quality Management Plan shall be attached to returnable form "Construction Approach, Methodology and Quality Control" and reference shall be made to site control testing, construction supervision, structured monitoring mechanisms such as checklists and other measures/processes that the tenderer deems to be significant. The Engineer will continually assess the quality of works on site and instructions will be provided for non-compliance accordingly.

- **Format of Communications**

Each instruction, certificate, submission, proposal, record, acceptance, notification, reply and other communication which this contract requires is to be communicated in a form which can be read, copied and recorded. Writing is to be in the language of this contract, i.e. English.

The contractor is to only receive instructions from the Engineer or the Engineer's representative. Should the contractor undertake any works from an instruction given to him by a third party, he will be solely responsible for any impacts thereof, including costs.

- **Management Meetings**

There will be a minimum of one (1) progress meeting per month. The contractor is to ensure that the Contracts Manager and Site Agent are present during this meeting. The CLO will be required to attend all progress meetings. This is over and above all meetings that the Contractor may deem necessary for the execution of the works.

- **Daily Records**

It is a requirement that a site diary with all relevant details be maintained on site. This diary must be signed off and agreed to by both the Engineer and Contractor, on a daily basis. These site diaries must accompany the Contractor's monthly payment certificates and payment shall not be processed should this not be complied to.

A suitable format of the site diary will be made available to the successful tenderer, by the Client.

- **Payment Certificates**

Payment certificates are to reach the Client by the 25th of each month. The following items are to accompany each payment certificate, but shall not be limited to the list below:

- i) Tax Invoice – Tax invoice number, Contract number, Project Description, correctly dated, to include both the Client's and contractor's Tax numbers, physical and postal addresses and to be addressed to Deputy Head, Development Engineering.
- ii) Fully completed FTE's (Client to provide format)

- iii) Summary of supporting agreed measurements for period of claim – to be signed off by both the Contractor and Engineer.
- iv) Updated cashflow reflecting Anticipated and Current expenditure together with mitigation measures if required.
- v) Updated number of serviced sites reflecting Anticipated and Current fully serviced sites together with mitigating measures.

- **Property provided for the Contractor's use**

Where possible, the Employer and/or Engineer will initially identify a proposed location for the Contractor's camp site and storage yard, however, the responsibility lies on the Contractor to liaise with the CLO/Ward Councillor in order to locate a suitable site that is available for occupation. Strict adherence to PS.14 "Site Facilities Available" is to be maintained at all times and the Contractor will be responsible for any transgressions in this regard.

C3.1.2 Description of Site and Access

A co-ordinate for a central point to each settlement is provided below. Refer to Section C4.1 "Locality Plan" for locality maps.

Coordinates: S 29° 58' 19.00", E 30° 54' 12.00"

The project area can be accessed by travelling south along the N2 freeway taking the M30 exit toward Umlazi and continuing along Griffiths Mxenge Highway/M30. Works are planned throughout Umlazi.

C3.1.3 Nature of Ground and Subsoil Conditions

Refer to Section C4.2 "Conditions on Site" for prevailing site conditions.

Furthermore, tenderers are urged to familiarise themselves with the ground and subsoil conditions in the region prior to pricing the tender document.

C3.2: PROJECT SPECIFICATION**PREAMBLE**

In the event of any discrepancy between a part or parts of the Standard or Particular Specifications and the Project Specification, the Project Specification shall take precedence. In the event of a discrepancy between the Specifications, (including the Project Specifications) and the drawings and / or the Bill of Quantities, the discrepancy shall be resolved by the Employer's Agent before the execution of the work under the relevant item.

C3.2.1 GENERAL**PS.1 PROGRAMME, METHOD OF WORK, AND ACCOMMODATION OF TRAFFIC**

This Clause is to be read in conjunction with the provisions and obligations as contained in SANS 1921-1 and SANS 1921-2.

PS.1.1 Preliminary Programme

The Contractor shall include with his tender a preliminary programme on the prescribed form (see Part T2.2: Preliminary Programme) to be completed by all Tenderers. The programme shall be in the form of a simplified bar chart with sufficient details to show clearly how the works will be performed within the time for completion as stated in the Contract Data.

Tenderers may submit tenders for an alternative Time for Completion in addition to a tender based on the specified Time for Completion. Each such alternative tender shall include a preliminary programme similar to the programme above for the execution of the works, and shall motivate his proposal clearly by stating all the financial implications of the alternative completion time.

The Contractor shall be deemed to have allowed fully in his tendered rates and prices as well as in his programme for all possible delays due to normal adverse weather conditions (refer to Clause 5.12.2.2) and special non-working days (refer to Clause 5.1.1.1) as specified in the in the Contract Data.

PS.1.2 Programme in Terms of Clause 5.6 of the General Conditions of Contract

It is essential that the construction programme, which shall conform in all respects to Clause 5.6 of the General Conditions of Contract, be furnished within the time stated in the Contract Data (refer to Clause 5.3.1/2).

The preliminary programme to be submitted with the tender shall be used as basis for this programme.

The Tenderer's attention is drawn to the fact that a number of factors will affect the programming of and method of carrying out the works. The more important of these are:

- (1) Time required for service relocations.
- (2) Time allowances to be made for the ordering of special items.
- (3) Notification required by service organisations.

- (4) Any special sequence in which work must be carried out. Must certain areas of work be finished before work commences on others?
- (5) If delays are anticipated with service relocations the contractor should be asked to allow time.
- (6) Is work required out of normal hours? (eg. to accesses).
- (7) Vehicular access to private property is to be maintained.
- (8) Traffic restrictions.

Those known, existing services in the area of the works have been depicted on the contract drawings. It is evident, however, that the status of existing service records as far as can be ascertained might not reflect the actual situation in the field. As such, due allowance has been made in the Bill of Quantities for the proving of services where directed by the Engineer.

PS.1.3 Requirements for Accommodation of Traffic

PS.1.3.1 General

Accommodation of traffic, where applicable, shall comply with SANS 1921-2: 2004: Construction and Management Requirements for Works Contracts, Part 2: Accommodation of Traffic on Public Roads occupied by the Contractor. The Contractor shall obtain this specification from Standards South Africa if accommodation of traffic will be involved on any part of the construction works.

Clause 4.10.4 of SANS 1921-2: 2004 shall be replaced with the following:

"Road signs and markings shall comply with the requirements of "The South African Road Traffic Signs Manual - Volume 2: Roadworks Signing".

PS.1.3.2 Basic Requirements

The travelling public shall have the right of way on public roads, and the Contractor shall make use of approved methods to control the movement of his equipment and vehicles so as not to constitute a hazard on the road.

The Contractor shall ensure that all road signs, barricades, delineators, flagmen and speed controls are effective and that courtesy is extended to the public at all times.

Failure to maintain road signs, warning signs or flicker lights, etc, in a good condition shall constitute ample reason for the Employer's Agent to suspend the work until the road signs, etc, have been repaired to his satisfaction.

The Contractor may not commence constructional activities affecting existing roads before adequate provision has been made to accommodate traffic in accordance with the requirements of this document and the South African Road Traffic Signs Manual.

The Contractor shall construct and maintain all temporary drainage works necessary for temporary deviations. The Contractor shall ensure that the existing property accesses are maintained at all times. Where necessary the Contractor shall make allowance in the rates for completing the work required to the accesses out of normal hours.

PS.1.3.3 Traffic Safety Officer

Where warranted by traffic conditions on or near the site, the Contractor shall nominate a suitable member of his staff as traffic safety officer to be responsible for the arrangement and maintenance of all the measures for the accommodation of traffic for the duration of the project. Duties of the traffic safety officer shall be in compliance with the Occupational Health and Safety Act 1993 and the Construction Regulations 2014.

PS.1.3.4 Payment

The Contractor's tendered rates for the relevant items in the Bill of Quantities shall include full compensation for all possible additional costs which may arise from this, and no claims for extra payment due to inconvenience as a result of the *modus operandi* will be considered.

PS.1.3.5 Pedestrian movement

The Contractor shall make provision for accommodating all pedestrian movements in the area of the works. Allowance shall be made in the relevant rates for any barricades and signs required.

PS.1.3.6 Temporary Reinstatement

Provided always that if in the course or for the purpose of the execution of the works or any part thereof any road or way shall have been broken up, then notwithstanding anything herein contained:

- (a) if the permanent reinstatement of such road or way is to be carried out by the appropriate authority or by some person other than the contractor (or any subcontractor to him), the contractor shall at his own cost and independently of any requirement of or notice from the Engineer be responsible for the making good of any subsidence or shrinkage or other defect, imperfection or fault in the temporary reinstatement of such road or way, and for the execution of any necessary repair or amendment thereof from whatever cause the necessity arises, until the end of the period of maintenance in respect of works beneath such road or way until the authority or other person as aforesaid shall have taken possession of the site for the purpose of carrying out permanent reinstatement (whichever is the earlier), and shall indemnify and save harmless that Council against and from any damage or injury to the Council or to third parties arising out of or in consequence of any neglect or failure of the Contractor to comply with the foregoing obligations or any of them and against and from all claims, demands, proceedings, damages, costs, charges and expenses whatsoever in respect thereof or in relation thereto.
- (b) where the authority or person as aforesaid shall take possession of the site as aforesaid in sections or lengths, the responsibility of the contractor under paragraph (a) of this sub-clause shall cease in regard to any such section or length at the time possession thereof is so taken, but shall during the continuance of the said period of maintenance continue in regard to any length of which possession has not been taken and the indemnity given by the contractor under the said paragraph shall be construed and have effect accordingly.

PS.2 SERVICES

This Clause is to be read in conjunction with the provisions and obligations as contained in **SANS 1921-1 and SANS 1921-2.**

PS.2.1 Existing Services

The Tenderer's attention is drawn to the numerous existing services in the area. Although every effort has been made to depict these services accurately the positions shown must be regarded as approximate.

PS.2.2 Proving Underground Services

This clause must be read in conjunction with Clause DB.5.1.2, the requirements of which shall be extended to cover all earthworks operations whether for trenching or bulk earthworks, in the vicinity of underground services.

It is stressed that all services in a particular area must be proven before commencing work in that area.

Insofar as bulk earthworks are concerned, where services are indicated on the drawings or where from site observations can reasonably be expected that such services are likely to exist where excavations are to take place, the Contractor shall without instructions from the Employer's Agent carefully excavate by hand to expose and prove their positions.

The cost of the proving trenches is to be included in the work covered by Clause DA.8.3.

When a service is not located in its expected position the Contractor shall immediately report such circumstances to the Employer's Agent who will decide what further searching or other necessary action is to be carried out and shall instruct the Contractor accordingly. The cost of this additional searching shall be to the Council's cost and shall be paid for under DB.8.19 - Proving Existing Services.

Should any service be damaged by the Contractor in carrying out the works and should it be found that the procedure as laid down in this clause has not been followed then all costs in connection with the repair of the service will be to the Contractor's account.

When electrical cables are not in the positions shown on drawings of eThekweni Electricity and cannot be found after proving trenches have been put down, assistance may be obtained by calling an official of the Works Branch on Telephone No. 311-1111 during office hours, or by contacting Control on Telephone No. 305-7171 after hours.

It should be noted that 33,000 Volt and 132,000 Volt cables may only be exposed by the eThekweni Electricity's personnel. The cables are usually protected by concrete covering slabs, and therefore if the slabs are inadvertently exposed, excavation work must stop, and the eThekweni Electricity shall be contacted immediately on the above telephone numbers.

Proving of services shall be completed at least two weeks in advance of the actual programmed date for commencing work in the area. The position of these services located must be co-ordinated and levelled by the Contractor, and the information given in writing to the Employer's Agent's Representative.

The requirements of this clause do not relieve the Contractor of any obligations as detailed in the Conditions of Contract or under Clause 4.17 of SANS 1921-1.

PS.2.3 New Services and Relocation of Existing

This clause shall be read in conjunction with **Clause PS.1**.

New services are either to be installed by the Contractor as part of the contract or by others during the contract period. In the latter case excavation and subsequent backfilling of the trench from the top of the bedding layer shall generally be carried out by the Contractor.

Relocation of services shall generally be carried out by the relevant services organisation. Generally their work shall include the excavating and bedding the service which will include backfilling to a depth of approximately 300 mm above the service. The remainder of the backfilling shall be carried out by the Contractor.

Generally work shall only commence on the installation of new services once the bulk earthworks have been completed and roughly trimmed to level along a substantial portion of the services route. In addition no sidewalk, verge, median or island shall be surfaced or topsoiled until all work on the services has been completed.

Services affected by the contract are described as follows:

- PS.3: Watermains;
- PS.4: Sewers;
- PS.5: Stormwater;
- PS.6: Electrical Cables / Lighting;
- PS.7: Telkom / Neotel;
- PS.8: CCTV;

Further to the above, tenderers are referred to the services drawing and are to note that several minor cables / pipes may be encountered during excavation works which may require to be relocated to some extent. It is anticipated that the two week period required under PS.2.2 will allow sufficient time for these relocations.

PS.2.4 Accommodation of Services

Further to Clauses PS.1 and PS.2 of this specification, tenderers are to note that allowance must be made under this item and / or the appropriate rates, for all costs incurred as a result of complying with these clauses. It shall also cover liaison with the services organisations and accommodation of their work gangs / contractors on site.

PS.3 WATERMAINS

PS.3.1 General

Tenderer's attention is drawn to the following points regarding the watermains to be installed as part of this contract.

Water mains will be constructed as part of this contract. The Contractor shall also take due care

when working in the vicinity of any existing watermains. Extreme care must be exercised when using vibratory compaction equipment in the vicinity of watermains since excessive vibration can easily damage the watermains and cause leaks to occur.

PS.3.2 Water Main Valve Access

Due to the dangerous situation occurring when water main valves are covered over, the Contractor shall maintain access to all water main valves at all times. During asphalt layer work, after each pass by the paving machine, the valves shall be exposed and access maintained in a safe condition.

Whatever method the Contractor chooses to use for this work, the cost of raising the valves from existing level to ultimate level shall be paid only once, irrespective of the number of times the valve is uncovered. Spacer rings required for the height adjustment of valve covers shall be supplied by the Water and Sanitation Unit. Tolerances on valve cover levels shall be as specified in clause PH.6.5. Before final setting in position of valve covers the Contractor shall liaise with the Employer's Agent regarding the direction in which covers shall be placed.

PS.3.3 Restriction on Compactive Equipment

The Contractor is to note that existing watermains traverse the site of the works and special care is to be taken in close proximity to these mains and connections. The existing mains and connections shall be proved on site by the Contractor prior to any construction work commencing in the vicinity of the watermains.

Under no circumstances will heavy road-making equipment, other heavy plant or vibratory compaction equipment be permitted to operate within 800 mm vertically or horizontally of the existing mains or connections. The permissible compaction plant within this restricted area shall be the equivalent of a "Bomag 90" under static compaction, or similar approved plant. When the roadworks are far enough advanced to provide a minimum of 800 mm cover to the existing mains, the above restriction will fall away.

The Contractor is to take cognisance of the above requirements when entering rates in the Bill of Quantities and in the programming of the works. No claim for additional payment based on the inability to use plant as a result of the requirements of this clause will be accepted. The Contractor will be held liable for any costs should the watermain or electrical cables be damaged during construction of the road.

PS.4 SEWERS

Sewers are to be installed as part of this contract as outlined in the project specification and reflected on the construction drawings. The contractor shall take due care when working in the vicinity of any existing sewers.

PS.4.1 Blockage of Foul Water Sewers

The Contractor shall be responsible for ensuring that cementitious sludge, sand and rubble from the works do not enter the foul water reticulation system. The Contractor shall be liable for any costs incurred by the Council or others as a result of blockages in the reticulation system attributed to failure to comply with the above requirement.

PS.5 STORMWATER

Stormwater infrastructure shall be constructed as part of this contract as outlined in the project specification and reflected on the construction drawings. The contractor shall take due care when working in the vicinity of any existing stormwater infrastructure.

PS.5.1 Blockage Stormwater Sewers

The Contractor shall be responsible for ensuring that cementitious sludge, sand and rubble from the works do not enter the stormwater reticulation system. The Contractor shall be liable for any costs incurred by the Council or others as a result of blockages in the reticulation system attributed to failure to comply with the above requirement.

PS.6 ELECTRICAL PLANT**PS.6.1 General**

Various types of electrical cables including high voltage, low voltage, street lighting and domestic connection cables are affected by the contract. The laying, relocation and jointing of all cables will be carried out by eThekweni Electricity's work gangs, or agents appointed by them, whilst the excavation and backfilling forms part of this contract. Close liaison will therefore be necessary with eThekweni Electricity throughout the contract.

PS.6.2 Street Lighting

The existing lighting will be removed in stages and replaced in the centre median / intersection corners. Relocation will take place during this contract and be executed by eThekweni Electricity or their agents. It is a requirement that the street lighting be operational at all times.

PS.6.3 MV / LV Cables

The actual cable work associated with this relocation and / or replacement of these cables will be carried out by eThekweni Electricity and it is stressed that the two week period referred to in Clause PS.2 is the minimum period required to enable eThekweni Electricity to be on site timeously.

PS.6.4 Relocation of Existing Services

Should it be necessary to adjust the line, level and / or position of any service not catered for in the contract to enable the construction to proceed the Contractor shall on no account effect such adjustment himself but shall notify the Engineer who will arrange for the work to be carried out at no cost to the Contractor.

PS.7 TELKOM S.A. LIMITED / NEOTEL PLANT

No work to Telkom / Neotel Plant is envisaged, but the tenderers attention is drawn to the fact that Telkom / Neotel copper cables and fibre optic cables may exist in the contract area. Extreme care must therefore be exercised when working near these services, once their approximate positions become known. The Contractor is advised to timeously advise Telkom/Neotel before commencing the abovementioned work.

PS.8 CCTV PLANT

No work to CCTV Plant is envisaged, but the tenderers attention is drawn to the fact that CCTV cables and fibre optic cables may exist in the contract area. Extreme care must therefore be exercised when working near these services, once their approximate positions become known. The Contractor is advised to timeously advise the relevant stakeholders if any services are encountered prior to proceeding with any works.

PS.9 MANAGEMENT OF THE ENVIRONMENT

The Contractor shall pay special attention to the following:

PS.9.1 Natural Vegetation

The Contractor shall confine his operation to as small an area of the site as may be practical for the purpose of constructing the works.

Only those trees and shrubs directly affected by the works and such others as the Employer's Agent may direct in writing shall be cut down and stumped. The natural vegetation, grassing and other plants shall not be disturbed other than in areas where it is essential for the execution of the work or where directed by the Engineer.

PS.9.2 Fires

The Contractor shall comply with the statutory and local fire regulations. He shall also take all necessary precautions to prevent any fires. In the event of fire the Contractor shall take active steps to limit and extinguish the fire and shall accept full responsibility for damages and claims resulting from such fires which may have been caused by him or his employees.

PS.9.3 Environmental Management Plan

In addition to the above, all requirements according to the Environmental Management Plan as detailed in C3.4: Particular Specifications, will be adhered to.

PS.10 OCCUPATIONAL HEALTH AND SAFETY

PS.10.1 General Statement

When considering the safety on site the Contractor's attention is drawn to the following:

When considering the safety on site the Contractor's attention is drawn to the following:

- (1) The project area consists of residential properties and the movement of pedestrians will have to be accommodated.
- (2) The works will require machinery and plant of varying size.
- (3) The manual moving of heavy precast products may be required.
- (4) The gradient of the site is fairly steep. Plant and machinery need to be well controlled.
- (5) Considering the prevailing terrain, run-off from the site will have to be well managed.

It is a requirement of this contract that the Contractor shall provide a safe and healthy working

environment and to direct all his activities in such a manner that his employees and any other persons, who may be directly affected by his activities, are not exposed to hazards to their health and safety. To this end the Contractor shall assume full responsibility to conform to all the provisions of the Occupational Health and Safety Act No 85 and Amendment Act No 181 of 1993, and the OHSA 1993 Construction Regulations 2014 issued on 7 February 2014 by the Department of Labour.

For the purpose of this contract the Contractor is required to confirm his status as mandatory and employer in his own right for the execution of the contract by entering into an agreement with the Employer in terms of Section 37(2) of the Occupational Health and Safety Act.

PS.10.2 Health and Safety Specifications and Plans to be submitted at tender stage

PS.10.2.1 Employer's Health and Safety Specification

The Employer's Health and Safety Specification is included in Part C3.4: Particular Specifications.

PS.10.2.2 Tenderer's Health and Safety Plan

At tender stage only a brief overview of the tenderers perception on the safety requirements for this contract will be adequate. This will be attached to Part T2.2: Contractor's Health and Safety Plan.

Only the successful Tenderer shall submit a separate Health and Safety Plan as required in terms of Regulation 7 of the Occupational Health and Safety Act 1993 Construction Regulations 2014, and referred to in Part T2.2: Contractor's Health and Safety Plan.

The detailed safety plan will take into consideration the site specific risks as mentioned under PS.10.1 and must cover at least the following:

- (i) A proper risk assessment of the works, risk items, work methods and procedures in terms of Regulations 9 to 29;
- (ii) Pro-active identification of potential hazards and unsafe working conditions;
- (iii) Provision of a safe working environment and equipment;
- (iv) Statements of methods to ensure the health and safety of subcontractors, employees and visitors to the site, including safety training in hazards and risk areas (*Regulation 7*);
- (v) Monitoring health and safety on the site of works on a regular basis, and keeping of records and registers as provided for in the Construction Regulations;
- (vi) Details of the Construction Supervisor, the Construction Safety Officers and other competent persons he intends to appoint for the construction works in terms of Regulation 8 and other applicable regulations; and
- (vii) Details of methods to ensure that his Health and Safety Plan is carried out effectively in accordance with the Construction Regulations 2014.

The Contractor's Health and Safety Plan will be subject to approval by the Employer, or amendment if necessary, before commencement of construction work. The Contractor will not be allowed to commence work, or his work will be suspended if he had already commenced work, before he has obtained the Employer's written approval of his Health and Safety Plan.

Time lost due to delayed commencement or suspension of the work as a result of the Contractor's failure to obtain approval for his safety plan, shall not be used as a reason to claim

for extension of time or standing time and related costs

A generic plan will not be acceptable.

PS.10.3 Cost of compliance with the OHSA Construction Regulations

The rates and prices tendered by the Contractor shall be deemed to include all costs for conforming to the requirements of the Act, the Construction Regulations and the Employer's Health and Safety Specification as applicable to this contract. Should the Contractor fail to comply with the provisions of the Construction Regulations, he will be liable for penalties as provided in the Construction Regulations and in the Employer's Health and Safety Specification.

Items that may qualify for remuneration will be specified in the Employer's Health and Safety Specification.

PS.11 SITE SECURITY

The Contractor shall, for the duration of the contract, provide sufficient security and watchmen to adequately ensure the safety and protection of the works, the Contractor's staff, including local labour and subcontractors, and all site plant and construction equipment required for the works.

Site Security, in conjunction with the SAPS (where necessary), shall be responsible for removal of disruptive elements, that may interrupt the progress of the contract through acts such as, but not limited to, intimidation, threats of disruption, violent disruption, or criminal and illegal activity by the local community or independent organisations or entities that may result in slowing down or partial or total stoppage of the works.

Payment for this item shall be made under Section 1, Part AB of the Bill of Quantities.

PS.12 PERFORMANCE MONITORING OF SERVICE PROVIDERS

The performance of service providers that have been selected to provide assistance in the provision of a municipal service, otherwise than in circumstances where Chapter 8 of the Municipal Systems Act applies, is required, by Section 116 of the Municipal Finance Management

Act, to be monitored and reported on (see Cl.53 of the SCM Policy).

The table below indicates the provisional KPIs which will be applicable to this contract and **an example** of how the scoring will be applied. The criteria will be reviewed and finalised prior to the commencement of construction. KPIs will be regularly evaluated and scored by the Employer and Engineer. Necessary measures will be taken should the scoring be consistently low.

KPI		Scoring (%)	
No.	Description	Month 1	Month "n"
1	Progress of Construction Works is consistent with approved Construction Programme.	95%	88%
2	Works are being carried out to specification.	75%	60%
3	Health and Safety Standards are being monitored adequately.	95%	85%
4	Health and Safety Standards are being maintained.	85%	75%
5	Conformance to Instructions issued.	65%	90%
6	Addressing of Labourer concerns.	80%	75%
7	Breach of Site Security.	95%	83%
8	Compliance with Environmental requirements	90%	83%
Legend			
KPI Score in excess of 90%			
KPI Score between 80% - 90%			
KPI Score below 80%			

PS.13 SURVEY**PS.13.1 Survey for, and Preparation of, "As Built" Drawings**

The Contractor shall submit the following "As Built" data to the Engineer to complete the required "As Built" Drawings before a Certificate of Completion will be issued:-

Footpaths and Roads:

- a) Footpath and Road centreline and edge co-ordinates at 10 metre intervals and at all changes in direction.
- b) All finished road and footpath levels, the location of kerblines, drains, embankments, services and intersections constructed or modified during the course of the contract.

Sewer, Stormwater and other services:

- a) Co-ordinates, invert and cover levels of all manholes modified or constructed as new, during the contract,
- b) Including but not limited to: open lined concrete drains, stormwater catchpits, manholes, kerb and channels, precast pipe culverts and outlet structures.
- c) Co-ordinates of all other services e.g. cable duct markers, valve covers, Telkom manholes etc. that have been either modified or constructed as new, during the contract.
- d) For Sewer pipelines, As-Built data for each Run/Pipeline Segment will be required as soon as it has been constructed and tested. It should be noted that if the submitted as-built information shows that the completed works are not in line with the design, the works will be rejected and the contractor is liable for the reconstruction of the works. Revised as-built information will be required and no payment will be made for additional as-built information.

General:

- e) Notwithstanding the above, the Contractor is to supply to the Engineer all other information necessary, to clearly indicate changes/modifications to the construction drawings during the contract period that will be required by the Engineer so that they can produce the "For Record" drawings.
- f) Each surveyed point shall be suitably coded and identifiable by the Design Consultant and shall be supplied on a CD/DVD, in an Ascii file with the following format:-
- g) Code[SPACE]XCoordinate[SPACE]YCoordinate[SPACE]Level[SPACE]Description
- h) The above information is to be given to an accuracy of three decimal places and is to be surveyed by a suitably qualified person.

In addition to the above, all 'as built' information must be provided on a drawing in Autocad and DXF format together with a hard (paper) copy format showing the modifications undertaken during the contract period. Suitable checks on the accuracy of the information provided may be carried out by the Design Consultant and should any of the information provided be found to be inaccurate or untrue, the Employer reserves the right to withhold payment or to employ the services of an engineering surveyor to re-survey all the works listed above, at the Contractor's expense. The Employer shall request a minimum of three quotations from three independent engineering surveyors of his choice, and the lowest quotation will be appointed and the cost thereof will be deducted from monies owing to the Contractor.

The 'as built' Data shall be the responsibility of the Contractor and shall be paid for under the item 'Survey for, and preparation of, "as built" drawings' in the Contractors Preliminary and General Costs.

The Contractor must also forward to the Engineer, a materials "as built" spreadsheet in a format that is acceptable by the Client.

The unit of measurement shall be (sum) and the rate shall include for all components outlined in this specification.

The completion certificate shall not be issued unless the above information in totality, has been forwarded to the Engineer.

PS.13.2 Setting Out of Works

The setting out of the works shall be the responsibility of the Contractor and shall be paid for under the item 'setting out' in the Contractor's Preliminary and General Costs. Any specific requirements pertaining to setting out and tolerances are noted in the relevant Standard Engineering Specifications.

The unit of measurement shall be (sum) and the rate shall include for the following:

The Contractor shall do the setting out to and beyond the obstructions. Such obstructions shall be reported to the Engineer as soon as possible. No additional payment shall be made for listing and reporting these obstructions and the re-establishment to set out areas that were affected by the obstructions.

PS.13.3 Additional Site Survey

The Engineer may instruct the contractor to conduct a survey during the course of the contract

in order to facilitate re-design due to immovable obstructions or to facilitate the design of new sections. The contractor will be required to submit all survey files in an Ascii format and drawings in a DXF/DWG format.

The unit of measurement shall be Provisional Sum (PC Sum) and the rate shall include for the survey as directed by the Engineer and the submission of all hardcopy and electronic files required by the Engineer.

PS.14 SITE FACILITIES AVAILABLE

PS.14.1 Contractor's camp site and depot

The Contractor's office for this contract shall be as required to fulfil his obligations under the Contract. The Contractor is responsible to provide a suitable site for his camp and to provide accommodation for his personnel and labourers. If the Employer can make any specific site available to the Contractor, such site will be pointed out to the Contractor.

(a) Contractor's camp site/store yard

The proposed position of the camp site/store yard will be pointed out by the Engineer. However, the responsibility lies on the Contractor to liaise with the CLO/Ward Councillor in order to identify a suitable site for occupation. The Contractor must first obtain the written permission of the landowner, and subsequently the Engineer, prior to occupation of the land. Any clearing of the site that is necessary and the making good after de-establishment will be the responsibility of the Contractor.

In addition to the requirements of SANS 1200 A clause 8.3.2.2 the following conditions shall also apply:-

- None of the existing roads shall be damaged in any way.
- Electrical and Potable water facilities may be available in the vicinity of the site but the contractor shall make his own arrangements for all connections.
- It shall be the responsibility of the Contractor to make good any damage caused to the camp site area or any improvements on it, including services, and for reinstating it to its former condition when vacated. The standard of reinstatement must be to the satisfaction of the Engineer, Director: Real Estate and/or Director of Parks, Recreation and Beaches Department; or other owner. Particular attention should be directed to these requirements and written clearances from the relevant Departments or other owners will be required.

PS.14.2 Accommodation of Employees

No employees, except for security guards, will be allowed to sleep or be accommodated on the site in urban areas. No housing is available for the Contractor's employees and the Contractor shall make his own arrangements to house his employees and to transport them to site.

No informal housing or squatting will be allowed. The Contractor shall provide the necessary ablution facilities at his camp site and the site of the works for the use of his employees. Chemical toilets only will be allowed where temporary facilities have to be provided.

PS.14.3 Power supply, water and other services

The Contractor shall make his own arrangements concerning the supply of electrical power, water and all other services. No direct payment will be made for the provision of electricity, water and other services. The cost thereof shall be deemed to be included in the rates and

amounts tendered for the various items of work for which these services are required, or in the Contractor's preliminary and general items as the case may be.

(a) Water for Works

The Contractor shall allow in his Establishment rates for the securing of a suitable water supply, the payment of any connection fee and for any water charges for the duration of the contract.

(b) Power supply for works

The power supply authority is eThekweni Electricity Services Unit. The contractor will be responsible for arranging whatever temporary supplies may be required and he will be required to bear all costs involved and to pay the ruling tariffs applicable to such supplies.

(c) Ablution facilities

The Contractor shall provide the necessary ablution facilities at the site of the works for the use of his employees. Chemical toilets only will be allowed where temporary facilities have to be provided.

PS.15 TESTING

PS.15.1 Process control

The Contractor shall arrange for all tests required for process control to be done by a laboratory acceptable to and approved by the Engineer.

The Contractor may establish his own laboratory on site or he may employ the services of an independent commercial laboratory. Whatever method is used, the Contractor must submit the results of tests carried out on materials and workmanship when submitting work for acceptance by the Engineer. The costs for these tests shall be deemed to be included in the relevant rates and no additional payment will be made for testing as required.

PS.15.2 Acceptance control

The process control test results submitted by the Contractor for approval of materials and workmanship may be used by the Engineer for acceptance control. However, before accepting any work, the Engineer may have further control tests carried out by a laboratory of his choice.

PS.15.3 Retesting

The tenderers' attention is drawn to clause AB.6 where it states that the contractor is responsible for the site control testing to confirm that all related site works are in accordance with the specification. Acceptance testing is undertaken by the Roads Department at the discretion of the Engineer after reviewing the results of the control testing.

Should the acceptance tests indicate that the work is not to the specification, the cost of any retest by the Engineer shall be to the Contractor's account. The cost has been determined at **R 1000,00 per set** of tests and shall be deducted from any payment due to the contractor.

PS.16 NOTICE BOARD

The notice board layout and colour scheme shall comply with the detail provided on standard drawing 40137E.

PS.17 UNPACKING AND RECONSTRUCTION OF EXISTING RETAINING WALLS

Where instructed by the Engineer, the contractor shall unpack existing retaining walls to allow for the construction of footpaths or roads or sewer and stormwater infrastructure.

The unit of measurement shall be square metre (m²) and the rate shall include for unpacking the wall, maintaining the blocks and reconstruction of the wall, where instructed. Concrete, soilcrete, excavations, trimming of embankment, stabilization of the embankment and drainage are measured elsewhere.

PS. 18 HAULAGE OF MATERIAL

All haulage under this contract will be considered as freehaul. The contractor is to price accordingly in his rates and no additional payment will be made in this regard.

PS.19 REMOVAL AND RELOCATION OF OBSTRUCTIONS

Where directed by the Engineer, the contractor shall remove and relocate obstructions, ablution facilities etc. This shall include the breaking down of the existing informal structure (wood and scrap metal) enclosing a structure with a maximum floor area of 42m². For uniformity in terms of pricing, tenderers are to price for removal of the informal dwelling and reconstruction of the dwelling using 25% new material and 75% existing material. The contractor shall liaise with all necessary stakeholders during this process and proceed with the removals only after acquiring an approval from the Engineer, homeowner, CLO and Housing Project Manager, where applicable.

The unit of measurement shall be number (No.) and the rate shall include for the dismantling, maintenance and reconstruction of all types of material or the demolishing and spoiling of the structure and reconstruction using new materials. In the case of the informal ablution facilities, the rate is to include for the closure of the existing pit after filling and disinfection/de-sludging as well as the subsequent excavation of a new informal pit where agreed with the homeowner. The informal enclosure for the pit is also to be removed and relocated to the new pit.

The contractor is to take note that construction may be disrupted throughout the contract period for these activities and this must be factored into his rates. No additional payment will be made in this regard. The Contractor shall take full responsibility for the structure after relocation. This shall also include for all safety measures to ensure that the relocated structure is sturdy and does not pose any danger to the inhabitants.

PS.20 REMOVAL AND RELOCATION OF ELECTRIC LIGHT POLES

Where Electric Light Poles are encountered during construction and re-alignment of pipelines/roads is not possible, the Engineer shall issue an instruction requiring the Contractor to contact the relevant department within Ethekwini Municipality and arrange for the relocation of the poles. All costs associated with the physical relocation of the poles will be borne by the Employer.

The unit of measurement shall be Number (No) and the rate shall include for all facilitation costs, liaison with municipal representatives, meetings, disbursements etc.

as indicated above. Payment for this item will be based on the below formula, and will only be made once the Engineer is satisfied that the works constructed by the relevant subcontractor are of the required standard, specification (referred to in the formula as *spec*) and quality.

PS.21 SUBCONTRACTORS

This clause is to be read in conjunction with section **C.1.2.3.3** under **Additional Conditions of Contract**.

The Contractor is required to allocate a portion of the works equivalent to 30% of the contract value (excluding PC Sum items and Fixed Cost allowances) to approved subcontractors as per the CPG requirements described in the above mentioned section.

PS.21.1 Supervision, Mentorship and Skills Transfer to Local Subcontractors

The Contractor is required to provide Supervision, Mentorship and Transfer of Skills to all subcontractors he appoints from local and surrounding wards as described in section C.1.2.3.3,

under this contract. This process is to be carried out through the works allocated to the subcontractors and/or through formal and informal training courses to be provided by the Contractor. The works allocated to subcontractors shall incorporate works of a nature that they are not yet competent, familiar and/or experienced in – the works should be carried out such that the subcontractors, after completion works, are thereafter competent and able to carry out that particular nature of work on their own with limited or no supervision.

PS.21.2 Measurement and Payment

Performance of the Contractor under this clause will be measured through reports, to be produced by the Contractor and submitted to the Engineer, quantifying the extent of Supervision, Mentorship and Transfer of Skill provided by the Contractor to the subcontractors. These reports shall contain the following details:

- (a) The nature of experience and competence of selected subcontractors before the allocation of the works and the Supervision, Mentorship and Skills Transfer process.
- (b) A schedule of works to be allocated to subcontractors. This shall highlight the components of the work (nature of the works, technical and administrative aspects thereof) which the subcontractor is not familiar with or has little to no competence and experience in.
- (c) A Supervision, Mentorship and Skills Transfer plan detailing how, through carrying out of the scheduled works, the Contractor intends to supervise, guide, assist and mentor the subcontractor in carrying out of the works; teach and introduce the subcontractor to more effective and efficient methods of working, and the various technical and administrative aspects of the scheduled works and the industry in general. This Plan shall list all the skills the Contractor intends to transfer onto the subcontractors and how the Contractor intends to do this.

The details described in the above points shall be submitted in a report for each subcontractor upon appointment thereof.

- (d) A schedule detailing the amount and nature of skills, competencies and experience acquired by the subcontractors through this process. This shall be measured against the Supervision, Mentorship and Skills Transfer plan as detailed in the above report.

The unit of measurement shall be (sum) and the rate shall include for the provisions of this clause as indicated above. Payment for this item will be based on the below formula, and will only be made once the Engineer is satisfied that the works constructed by the relevant subcontractor are of the required standard, specification (referred to in the formula as *spec*) and quality.

$$\text{Payment amount} = \frac{\text{Value of work constructed by subcontractor to spec}}{\text{Total value of work to be subcontracted}} * \text{Tendered Sum for Mentorship, Skills Transfer etc}$$

PS.22 TECHNICAL SPECIFICATION – QUARRY PRODUCTS

PS.22.1 Scope

This specification covers the use of Quarry Products.

PS.22.2 References and Standards

Reference to the following standard specifications, guideline documents and codes of practice shall be deemed to be references to the latest issues of the relevant documents: -

- SANS 1083 : Aggregates from natural sources - Aggregates for concrete
- SANS 3001-AG1 : Particle size analysis of aggregates by sieving
- SANS 3001-AG4 : Determination of the flakiness index of coarse aggregate
- SANS 3001-AG5: Sand equivalent value of fine aggregates
- SANS 3001-AG13 : Determination of the soundness of mudrock aggregates
- SANS 3001-AG14 : Determination of the ethylene glycol durability index for rock
- SANS 3001-AG10 : ACV (aggregate crushing value) and 10% FACT (fines aggregate crushing test) values of coarse aggregates
- SANS 3001-AG20 : Civil engineering test methods Part AG20: Determination of the bulk density, apparent density and water absorption of aggregate particles retained on the 5 mm sieve for road construction materials
- SANS 3001-AG21 : Civil engineering test methods Part AG21: Determination of the bulk density, apparent density and water absorption of aggregate articles passing the 5 mm sieve for road construction materials
- SANS 3001-GR10 : Determination of the one-point liquid limit, plastic limit, plasticity index and linear shrinkage
- SANS 3001-GR12 : Determination of the flow curve liquid limit
- SANS 3001-GR 40 : Determination of the California bearing ratio
- SANS 5848 : Polished-stone value of aggregates
- SANS 6243 : Deleterious clay content of the fines in aggregate (methylene blue adsorption indicator test)
- TMH 1 : Standard methods of testing road construction materials
- TRH 14 : Guidelines for Road Construction Materials
- TRH 20 : Unsealed Roads : Design, construction and maintenance

Where applicable, material characteristics shall generally be determined in accordance with the SANS 3001 series of civil engineering test methods which have superseded the Department of

Transport's TMH 1 standard test methods. The use of test methods in the TMH series may under certain circumstances be permitted in place of the equivalent method in the SANS 3001 series (eg. the use of the equivalent TMH or SANS "concrete" test sieve sizes instead of the SANS 3001 series test sieve sizes).

PS.22.3 Specification

(i) Crushed Stone for Concrete Work, Drainage Work and Asphalt Production

Crushed stone material shall consist of unweathered rock derived predominantly from either Natal Sandstone (Quartzite) or Dwyka Tillite. The grading and dust content of the crushed stone shall conform to the requirements stipulated in SANS 1083 Table 2 (Coarse aggregate for concrete). The material shall conform to the following addition requirements :-

Property	Specification
Flakiness Index	≤ 35
10% FACT (dry)	≥ 160kN
10% FACT (wet)	≥ 75% of dry 10% FACT value
Water Absorption	≤ 1%
Polished Stone Value	≥ 50

The nominal aggregate sizes (SANS 1083 Table 2) are 19.0mm, 13.2mm and 9.5mm.

(i) Graded Crushed Stone Base Course for Roads

Graded crushed stone material shall consist of unweathered rock derived predominantly from either Natal Sandstone (Quartzite) or Dwyka Tillite and shall comply with the following criteria :-

Property	Nominal Size of Aggregate (mm)	
	37,5	28,0
Grading, % (m/m)	% Passing	
Nominal Sieve Size (mm)		
100	100	100
37.5	84-94	100
28.0	71-84	85-95
20.0	59-75	71-84
14.0	36-53	42-60
5.0	23-40	27-45
2.0	11-24	13-27
0.425	4-12	5-12
0.075		
<u>Flakiness Index</u> (max.) (applicable only to the fraction -28,0mm and 14,0mm)	35	
<u>10% Fact</u> (kN) (min.)	Dry	160

	Wet	120
<u>Atterberg Limits</u>		
Liquid limit (max.)		25
Plasticity index (max.)		6
Linear shrinkage (%) (max.)		3
<u>CBR @ 98% MDD (min.)</u>		80
<u>% Swell @ 100% MDD (max.)</u>		0.2

(c) Weathered Rock for Gravel Roads and Verges

Weathered rock material shall conform to the following requirements (TRH 20) :-

Property	Specification
Maximum Size	≤ 37.5mm
Shrinkage Product	75 to 240
Grading Coefficient	16 to 34
CBR @ 95% MDD	≥ 15%
Treton Impact Value	20% to 65%
% Passing 0.425mm Sieve (P0.425)	≥ 15%
Linear Shrinkage	≥ 5%
Plasticity Index	≥ 10

where :-

$$\text{Shrinkage Product} = \text{Linear Shrinkage} \times P_{0.425}$$

$$\text{Grading Coefficient} = \frac{(P_{28.0} - P_{2.0}) \times P_{5.0}}{100}$$

(d) Crusher Dust for Asphalt Manufacture

Crusher dust shall be derived predominantly from Dwyka Tillite and shall be continuously graded with the following target grading :-

Sieve Size (mm)	Target % Passing
7.1	100
5.0	96
2.0	63
1.0	39
0.600	30
0.300	23
0.150	17
0.075	13

The range of values of % passing on every sieve size shall fall within the following range limits over any 3 month period (or part thereof) :-

Sieve Size (mm)	Range Limits (Max value – Min. value)
7.1	0.0
5.0	10.0
2.0	10.0
1.0	10.0
0.600	7.0
0.300	5.0
0.150	4.0
0.075	2.5

The crusher dust shall also conform to the following:-

Property	Specification
Sand Equivalent	≤ 40
Methylene Blue Adsorption Value	≤ 0.7
Water Absorption	≤ 1.5
% Passing 7.1mm Sieve	100
Sum % Passing	335 to 445
Grading Index	≤ 1.74

where :-

Sum % Passing
(Rounded to 0 decimal places) = Sum of the % passing the following sieves :
7.1, 5.0, 2.0, 1.0, 0.600, 0.300, 0.150, 0.075

Grading Index
(Rounded to 2 decimal places) = $\frac{300 - (P_{5.0} + P_{1.0} + P_{0.075})}{100}$

The moisture content of the crusher dust shall not exceed 3%.

(e) Crusher Rock for "Gabions" and Stone Pitching

The rock shall be clean, hard unweathered crushed rock with a minimum bulk relative density of 2.6. The dimensions indicated are the largest dimensions on any particular rock. No rock shall exceed the maximum size specified and 85% of the rocks in a particular nominal size shall fall within the limits specified. No rock shall have a least dimension less than 2/3 of the indicated nominal minimum size.

Various nominal sizes are required, namely :-

- (i) - 300 mm + 225 mm
- (ii) - 225 mm + 150 mm
- (iii) - 150 mm + 100 mm

(f) Weathered Dump Rock for Roadworks

The dumprock material shall consist of sound to weathered rock graded from - 150mm down to + 37.5mm. Fines of up to 10% passing the 37.5mm sieve size are permitted. The material shall have a minimum 10% FACT dry value of 100kN and a minimum wet value of 40kN. Shale and mudrock shall fall within the mudrock soundness classes of I or II (SANS3001:AG13).

The 5 day Ethylene Glycol Durability Index (EGDI) of aggregates derived from the basic crystalline group (Dolerite) shall be less than 20, and the Ethylene Glycol Durability Index Ratio shall be less than 1.5 (unless the 20 day EGDI is less than 20 in which case EGDI Ratio

shall not apply).

(g) Selected G7 Material for Roads and Trench Backfill

G7 material shall conform to the following requirements :-

Property	Specification
Stone Size (max.)	75mm
Grading Modulus (min.)	0.75
Plasticity Index (max.)	12 or 3xGrading Modulus+10
Group Index (max.)	1
CBR @ 93% MDD (min.)	15%
Swell @ 100% MDD (max.)	1.5%

Shale and mudrock shall fall within the mudrock soundness classes of I or II (SANS3001:AG13).

The 5 day Ethylene Glycol Durability Index (EGDI) of aggregates derived from the basic crystalline group (Dolerite) shall be less than 20, and the Ethylene Glycol Durability Index Ratio shall be less than 1.5 (unless the 20 day EGDI is less than 20 in which case EGDI Ratio shall not apply).

(h) Selected G5 Material for Roads

G5 material shall conform to the following requirements:-

Property	Specification
Stone Size (max.)	63mm
Grading Modulus (min.)	1.5
Liquid Limit (max.)	30
Plasticity Index (max.)	10
Linear Shrinkage (max.)	5%
Group Index (max.)	0
CBR @ 95% MDD (min.)	45%
Swell @ 100% MDD (max.)	0.5%

The 5 day Ethylene Glycol Durability Index (EGDI) of aggregates derived from the basic crystalline group (Dolerite) shall be less than 10, and the Ethylene Glycol Durability Index Ratio shall be less than 1.5 (unless the 20 day EGDI is less than 10 in which case EGDI Ratio shall not apply).

Shale and mudrock are not acceptable materials.

PS.23 TESTING - QUARRY PRODUCTS

PS.23.1 Samples & Test Results

Tenderers are to note that the successful Tenderer will be required to submit test results of the products that they intend to supply as part of the works. The testing indicated below is for indicative purposes only and in no way precludes compliance of any particular product with any other test reflected in the Technical Specification. If so required, the successful tenderer may also be required to submit test results for tests not indicated in the list below, but falling within the requirements of the Technical Specification. Nevertheless, all of the tests listed under each item below must be conducted for evaluation processes throughout the contract.

Product		Minimum Sample Size for Testing (kg)	Test Requirements											
			Predominant Parent Rock Geology	Grading	Grading modulus	Flakiness index	Liquid limit	Plasticity index	Linear shrinkage	CBR (including swell)	10%FACT (Dry & Wet)	Sand Equivalent	Shale & Mudrock Soundness	Dolerite Durability
a	Crushed Stone for Concrete Work, Drainage Work and Asphalt Production	25	X	X		X								
b	Graded Crushed Stone Base Course for Roads	75	X	X		X	X	X	X	X				
c	Weathered Rock for Gravel Roads and Verges ¹	75		X			X	X	X	X				
d	Crusher Dust for Asphalt Manufacture ²	10	X	X								X		
e	Crusher Rock for "Gabions" and Stone Pitching	No testing required												
f	Weathered Dump Rock for Roadworks	75									X		X	X
g	Selected G7 Material for Roads and Trench Backfill	75		X	X		X	X	X	X			X	X
h	Selected G5 Material for Roads	75		X	X		X	X	X	X				X

1. Grading must include sieve sizes 28.0mm, 5.0mm, 2.0mm and 0.425mm.

2. Grading must include sieve sizes 7.1mm, 5.0mm, 2.0mm, 1.0mm, 0.600mm, 0.300mm, 0.150mm and 0.075mm.

Test results submitted during construction will only be considered if testing is undertaken by a laboratory accredited by SANAS to undertake such tests. A copy of the testing laboratory's SANAS accreditation certificate together with the schedule of accredited tests must accompany the test results submitted.

Tenderers are to note that successful Tenderers will be required to implement a Quality Management System for supply of their particular product. It is a requirement of the QMS that the Supplier shall undertake routine testing of the products supplied during the course of the contract (as detailed in the Special Conditions of Contract). The cost of implementing the QMS together with related testing shall be included in the rate for the particular product.

PS.24 REMOVAL OF UNWANTED MATERIAL

The Contractor is responsible for the clearance and removal of all unwanted material arising from the works for the duration of the contract from site handover until completion. No payment will be authorized until all unwanted material resulting from the works has been removed from the site.

The waste must be disposed off at an approved tip-site. The composition of the waste is unknown and the contractor must envisage/expect different types of wastes.

Waste products could include:

Solid Wastes, Gaseous Wastes, Animal by-products, Biodegradable/Organic waste, Biomedical

waste Bulky waste, Business waste, Chemical waste, Clinical waste, Commercial waste, Construction and demolition waste, Controlled waste, Consumable waste, Composite waste, Demolition waste, Domestic waste, Electronic waste, Food waste, Green waste, Grey water, Hazardous waste, Household waste, Human waste, Industrial waste, Inert waste, Kitchen waste, Litter, Liquid waste, Medical waste, Metabolic waste, Mixed waste, Municipal solid waste, Packaging waste, Post-consumer waste, Radioactive waste, Recyclable waste, Residual waste, Retail hazardous waste, Sewage, Toxic waste, Uncontrolled waste, Wastewater, etc.

All vegetation, rubble, excavated material and spoil from the clearing and excavations associated with the Works shall be transported and disposed of at an approved tip site. The Contractors attention is drawn to the fact that charges are levied at the Municipal Refuse Tip for the dumping of certain types of material. The Contractor shall therefore make due allowance in his rates for removal to tip to include for the above charges.

PS.24.1 Penalties For Not Removing Unwanted Material By End Of Work Day

A penalty of R1000/day shall be to the Contractor's account should he/she not remove and dispose of all unwanted material by the end of the work day's operation.

PS.25 DEMOLITION OF SEPTIC TANK SYSTEMS

Where directed by the Engineer, the Contractor shall demolish existing septic tanks to allow for the construction of new services.

The unit of measurement shall be number (No) and the rate shall include for the following:

- Careful de-sludging of the septic tank by a specialist and adherence to all Environmental requirements relating to the demolition process and disposal of all effluent as well as associated products.
- Demolition of the existing concrete bases, footings and cover slabs (not exceeding 2m³ in total) and associated rebar and the spoiling of material in an approved dump site.
- Demolition of brickwork (not exceeding 18m² in total) and spoiling of material in an approved dump site.
- All earthworks/excavations required for the process.

Contractors will be responsible for the safe and efficient demolition of septic tank systems for the project including all disinfection requirements. Should there be any spillage of hazardous matter, contravention of Environmental requirements, damage to nearby property or safety hazards imposed on the community, the Contractor will be fully responsible.

PS.26 PAYMENT TO PROFESSIONAL SERVICE PROVIDERS

Provisional Sums have been allocated in the Schedule of Quantities for the payment of professional service providers (PSPs) who will be required to execute specific works as part of this Contract. The nominated Programme Manager shall be **BVi Consulting Engineers**. The PSPs that are required for this Contract include the following: Civil and Structural Engineer, Townplanner, Environmental Consultant, Geotechnical Engineer, and Social Facilitator.

PS.26.1 Duties of the Programme Manager

The Programme Manager shall be responsible for appointing all PSPs and managing all works to be executed by a PSP. A session agreement shall be prepared by the Employer and

payments due to PSPs shall be ceded by the Contractor to the Programme Manager. The Programme Manager shall then be responsible for payment to each PSP within 7 days of receiving payment. The appointment of PSPs shall take place through a competitive quotation process to be facilitated by the Programme Manager. Individual sub consulting agreements shall then be prepared for each appointment by the Programme Manager.

The Programme Manager shall also be responsible for preparing progress reports, cash flow data and an activity schedule for all professional services undertaken on this Contract.

PS.27 ANCILLARY FITTINGS FOR PLUMBING WORKS

The Engineer may instruct the contractor to install additional fittings to the plumbing works during the course of the contract in order to ensure that the plumbing works are constructed/fitted according to design and specification.

The unit of measurement shall be Provisional Sum (Prov Sum) and the rate shall include for all the ancillary fittings on plumbing works as directed by the Engineer. The rates to execute the works shall be requested by the Engineer and the Contractor shall provide a quotation accordingly. The Engineer reserves the right to reject any rates that are not market related and the Contractor will then be required to provide a revised quotation to the satisfaction of the Engineer.

PS.28 REMOVAL AND RELOCATION OF VIP TOILETS

Where directed by the Engineer, the contractor shall remove and relocate the existing VIP ablution facilities. This shall include the breaking down of the existing structure (brick walls, doors, roof etc), closure of the existing pit after filling and disinfection/de-sludging.

The contractor shall liaise with all necessary stakeholders during this process and proceed with the removals only after acquiring an approval from the Engineer, homeowner, CLO and Housing Project Manager, where applicable.

The unit of measurement shall be number (No.) and the rate shall include for the dismantling of the old structure and reconstruction of all types of material or the demolishing and spoiling of the structure and reconstruction using new materials. The new structure shall be reconstructed according to the following standards/specifications.

- The plan dimensions for the blockwork to the pits shall be 2,84m x 1,39m with a height of 0,80m high and the size for each compartment shall be 1,21m x 1,21m. The blockwork shall be constructed using M150 blocks with mortar joints to be 10mm using 1:5 cement/sand ratio.
- The structure shall have the following dimensions, 985mm x 1080mm x 2200mm high (internal dimensions). The structure shall be covered with 0.8mm thick galvanised metal sheeting IBR profile, with 75 x 50mm batten and 38 x 38mm batten. Metal sheeting to be notched around the vent pipe.
- IBR profile shall be fixed to battens using 5mm coach screws and the battens shall be fixed to the structure with 12-gauge wire.
- The door frame shall be 75 x 50mm SAP (4) fixed to structure at 400 c/c with Hilti HPS 8/60 Impact Anchor or similar approved. The door shall be 813 x 2000mm to be hinged securely and fitted with latches and secured both from the inside and outside.
- The vent pipe shall be constructed using 110mm dia. uPVC pipe fixed to the structure using holderbats at 500mm centres with an end cap and fly screen (1mm²

aluminium or stainless steel).

- The floor to vault shall be screeded with 50mm of 1:3 cement sand mix.
- Two removable 75mm thick precast concrete cover slabs.
- A 500 x 500 x 500mm rubble filled urine diversion soakpit shall be constructed at least 2m away from the structure. The urine diversion pipework shall be constructed using 40mm dia. uPVC pipe fixed to concrete and blockwork at maximum 400mm c/c using purpose made holderbats.

The contractor is to take note that construction may be disrupted throughout the contract period for these activities, and this must be factored into his rates. No additional payment will be made in this regard. The Contractor shall take full responsibility for the structure after relocation. This shall also include for all safety measures to ensure that the relocated structure is sturdy and does not pose any danger to the inhabitants. Further to the above during construction the Engineer will assess the condition of the dismantled material to confirm if the material can be reused for construction and the tendered rate will be discussed/negotiated accordingly.

PS.29 ADDITIONAL SEWER CONNECTIONS

The Engineer may instruct the contractor to construct additional sewer pipelines during the course of the contract in order to ensure that the sewerage effluent from existing septic tanks and houses does not pose a health and safety risks to the community. Also to ensure that the sewerage effluent does not contaminate the environment.

The unit of measurement shall be Provisional Sum (Prov Sum) and the rate shall include for all the related works as directed by the Engineer. The rates to execute the works shall be requested by the Engineer and the Contractor shall provide a quotation accordingly. The Engineer reserves the right to reject any rates that are not market related and the Contractor will then be required to provide a revised quotation to the satisfaction of the Engineer.

C3.3: STANDARD SPECIFICATIONS

C3.3.1 The Specifications on which this contract is based are the eThekwiini Municipality's (City of Durban) Standard Engineering Specifications (hereafter referred to as the Standard Engineering Specifications). This document is obtainable separately, and Tenderers shall obtain their own copies of the applicable Sections.

Part	Description	Date of Issue	
AB	General Specifications	July	1992
AH	Occupational Health and Safety Specification		2012
B	Site Clearance	March	1990
C	Concrete Work	February	1987
DA	Earthworks: Bulk	January	1985
DB	Earthworks for Pipe Trenches	July	1992
DD	Earthworks for Structures	January	1985
EB	Graded Crushed Stone	December	1988
EC	Cement Treated Graded Crushed Stone	December	1988
ED	Road Asphalt	July	1992
EF	Kerbs and Haunches	July	1992
EG	Sidewalks, Footpaths and Median Areas	July	1992
F	Protection Works	July	1992
PG	Non-Pressure Pipelines and PC Culverts	July	1992
PE	Pressure Pipelines: Steel	March	1983
PF	Pressure Pipelines: Other than Steel	July	1983
PH	Manholes and Appurtenant Drainage Works	July	1992
S	Reinstatement	March	1993
TA	Road Signs	October	1989
TB	Road Markings	October	1989

C3.3.2 AMENDMENTS TO THE STANDARD SPECIFICATIONS

INTRODUCTION

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

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

PS AB	General Specifications
PS B	Site Clearance
PS C	Concrete Work
PS DA	Earthworks: Bulk
PS DB	Earthworks for Pipe Trenches
PS ED	Road Asphalt
PS EF	Kerbs and Haunches
PS EG	Sidewalks, Footpaths and Median Areas
PS F	Protection Works
PS PF	Pressure Pipelines: other than Steel
PS PG	Non Pressure Pipelines and Pc Culverts
PS PH	Manholes and Appurtenant Drainage Works

PRELIMINARY AND GENERAL SPECIFICATION**PS.AB.2 Offices for Engineer and Staff**

Replace the existing clause with the following:

An office with the following requirements must be provided for the Engineer:

- A desk with minimum dimensions of 1.5m x 0.8m and a high back chair.
- A plug point.
- A lockable steel filing cabinet.
- A whiteboard mounted on the office wall with dimensions of 1.8m x 1.2m.

For site meetings, the Contractor is to prepare a meeting area that accommodates a table and eight chairs.

PS.AB.7 Road Deviations and Traffic Control**PS.AB.7.1 Deviations**

Add the following under this section:

- (a) Deviations required by the Contractor shall comply with the requirements of the Engineer. Details shall be submitted to the Engineer for approval at least two weeks in advance of the date on which it is anticipated that work on the deviation will commence.
- (b) On deviations provided in terms of (a) above, the Contractor shall ensure at all times and during all weather conditions that all temporary surfaces that are intended to carry traffic are in fact trafficable with regard to reasonable standards of safety and comfort. No additional payment shall be made to the Contractor in this regard.
- (c) Unless indicated otherwise, where two-way traffic conditions exist, traffic shall be accommodated in both directions at all times.
- (d) The Contractor shall ensure that the full width of the road is available for traffic during the peak traffic periods (i.e. 07:00 - 08:30 and 16:00 to 17:30).
- (e) At all times signposting shall be as detailed in the part of this document: "Safety in Road Construction".
- (f) In accordance with the Road Traffic Act, only "new style" yellow/black traffic signs may be used at roadworks, and not the "old style" blue/red traffic signs.

PS.B SITE CLEARANCE**PS.B.8 Measurement and Payment****PS.B.8.13 Demolishing Of Concrete Slabs**

Replace the existing clause with the following:

The contractor shall demolish reinforced/ unreinforced slabs as directed by the engineer to spoil.

The unit of measurement shall be cubic metre (m³) and the rate shall include for the demolition of the concrete slab, plant, equipment and labour necessary and spoiling of the material in an approved site.

Add the following new clause:

PS.B.8.23 Removal and relocation of standpipes

During construction, informal standpipes may have to be removed and relocated to cater for the construction of new services.

The unit of measurement shall be number (No) and the rate shall include for the following: Removal of the existing pipeline including excavation. The existing tap as well as other fittings are to be removed, set aside and protected. The connection is to be reconstructed including for a new pipeline (20mm ø HDPE maximum 5m in length), installation of fittings, backfilling etc. All plant and labour necessary to complete the works is also to be allowed for.

Add the following new payment clause:

PS.B.8.24 Removal of informal Retaining structures

During construction, informal retaining structures (tyres, sandbags, etc) may have to be removed to cater for the construction of new services.

The unit of measurement shall be square metre (m²) and the rate shall include for unpacking the retaining structure, stockpiling, disposing off at an approved tip-site, haulage etc. The contractor shall ensure that the embankment will remain safe/stable and does not pose any danger to the community during unpacking of the structure and the construction of the new services.

PS.C CONCRETE WORKS

PS.C.5 Construction

PS.C.5.11 Placing of concrete

Add the following under this section:

No concrete is to be placed in any excavation until prior approval has been received from the Engineer or his representative.

PS.C.8 Measurement and Payment

Add the following new clause:

PS.C.8.5 Movement Joints for Footpaths

Movement joints shall be constructed in accordance with the detail on drawing D134C.00-UZ2-104-01-T0 and shall be constructed at 10m centres along the footpath alignment or where directed by the Engineer.

The unit of measurement shall be metre (m) and the rate shall include for all materials (polysulphide sealant, jointex joint filler etc.), labour, equipment etc.

Add the following new clause:

PS.C.8.6 Saw Cut Joints for Footpaths

Saw Cut Joints shall be constructed on footpaths as instructed by the Engineer. The contractor shall use the type of blade and equipment best suited to the hardness of the concrete, the type of aggregate and the site condition.

The unit of measurement shall be metre (m) and the rate shall include for all materials, labour and plant required. Refer to drawing D134C.00-UZ2-104-01-T0.

Add the following new clause:

PS.C.8.7 Transverse Joints for Access Roads

Transverse joints shall be constructed across all concrete surfaced roadways 3m – 4.5m wide roads as indicated on drawing D134C.00-UZ2-104-01-T0 or as directed by the Engineer.

The unit of measurement shall be metre (m) and the rate shall include for all materials, labour and plant required.

Add the following new clause:

PS.C.8.8 Isolation Joints for Access Roads

Isolation joints shall be constructed around every manhole that is constructed within the concrete roadway as per drawing D134C.00-UZ2-104-01-T0. The joint shall consist of a 10mm wide polysulphide sealant strip recessed 3mm, jointex joint filler etc.

The unit of measurement shall be metre (m) and the rate shall include for all materials, labour and plant required.

Add the following new clause:

PS.C.8.9 Longitudinal Joints for Roads

Longitudinal joints including 500mm long dowel bars (@ 750mm c/c) shall be constructed as directed by the engineer as reflected on the construction drawings and shall fully comply with detail on drawing D134C.00-UZ2-104-01-T0.

The unit of measurement shall be metre (m) and the rate shall include for all materials, labour and plant required. Dowel Bars are measured elsewhere.

Add the following new clause:

PS.C.8.10 Cast In-situ/onsite Concrete Panels

As directed by the engineer, cast in-situ concrete panels 800mm x 800mm x 100mm thick (25MPa/19mm) shall be constructed as part of the footpaths to allow for safe access over the drain, bolted with 6No. M10 Hilti or similar approved countersunk bolts and polysulphide sealant over the bolt head. Refer to Detail B on drawing D134C-UZ2-104-01-T0.

The unit of measurement shall be number (No.) and the rate shall include all plant, labour,

materials for the construction of the concrete panels.

Add the following new clause:

PS.C.8.11 Panel Anchors and Anchor Blocks

Where indicated on the construction drawings or as directed by the Engineer on site, Panel Anchors and Anchor Blocks shall be constructed as part of the roadway. The construction of these items shall comply fully with drawing D134C.00-UZ2-104-01-T0.

The unit of measurement shall be cubic metre (m³) and the rate shall include for the supply and casting of 40MPa/26mm concrete, all necessary materials, labour and use of plant and for compacting and bringing to the required finish, for any protective works against rain and hot weather, curing and for hacking, cleaning and bonding. Excavation and formwork is measured elsewhere.

PS.DA EARTHWORKS: BULK

PS.DA.5 Construction

PS.DA.5.2 Excavation of Material from Site

Add the following under this section:

- (a) The material used for fill embankments and for the replacement of unsuitable material shall conform to the definition of "suitable material" as given in clause AB.1. This will apply to imported fill material as well as to material excavated from site.
- (b) Tenderers are reminded that the rates for excavation of material from site (DA.8.3) and imported fill (DA.8.4) include benching where applicable, and therefore the volume of soil excavated for benching purposes is not included in the earthwork quantities but must be allowed for in the relevant rates.
- (c) The nature of the works may require excavation in restricted conditions. No additional payment shall be made for such excavation and the Tenderer shall therefore make due allowance in the rates for Bulk Earthworks for any additional work or hand excavation.
- (d) For measurement and payment purposes, no allowance will be made for bulking or shrinkage and it shall be assumed that 1 cubic metre of excavated material from the site shall form 1 cubic metre of compacted fill. In the event of there being surplus material encountered on site due to bulking, the Tenderer shall allow in the relevant rates for the material to be spoiled. Similarly, should the material shrink the Tenderer shall allow for the importation of material.
- (e) Blasting shall not be carried out without the previous consent of the Engineer. The consent will not be given where in the opinion of the Engineer blasting may give rise to unnecessary risk of damage to surrounding property, and other means of excavation are available to the Contractor. Where consent to blasting is given, such consent shall in no way relieve the Contractor of any liabilities under the contract. The Contractor shall conform to all Government regulations in regard to blasting, handling and storage of explosives.

PS.DB EARTHWORKS FOR PIPE TRENCHES**PS.DB.5 Construction****PS.DB.5.3.2 General**

Add the following under paragraph (a) of this section:

All trenches with a depth exceeding 1.5m shall be fully shored and the contractor is to include for this in his rates. Details of the proposed shoring shall be supplied to the Engineer at least two weeks before the operation commences. During the backfilling, the sides of the trench including the road/footpath layers above any over-excavated sections shall be cut back to a point behind the over-excavation. The cutting back of the trench sides shall be to the Contractor's account and payment for the excavation through road hardening, and reinstatement shall be based on the widths given in clause DB.8.3.3.

PS.DB.8 Measurement and Payment**PS.DB.8.5 Excavation and Backfilling in All Materials**

Replace Item "(8)" with the following:

- (8) disposing of surplus material due to bulking, displacement by the pipe and a surplus resulting from importation of suitable backfill/bedding material as well as the disposal of any unsuitable material encountered within the trench. This shall also apply to any extra over payments relating to this clause.

PS.ED ROAD ASPHALT

Replace the following Items within Part ED: "Road Asphalt"

PS.ED.1 Definitions

The following definitions and abbreviations shall be used throughout the specifications: -

NMPS	Nominal maximum particle size
Sa	Sand skeleton mix
St	Stone skeleton mix
SMA	Stone mastic asphalt
EME	Enrobé à module élevé
UTFC	Ultra-thin friction course
WMA	Warm mix asphalt
BRASO	Bitumen rubber semi-open graded asphalt
S	Standard traffic and speed conditions
H	Heavy traffic and speed conditions
V	Very heavy traffic and speed conditions
E	Extreme traffic and speed conditions
R	Permanent deformation (Rutting) foremost consideration in mix
F	Fatigue foremost consideration in mix

Table 1 – Definitions

PS.ED.1.1 Mix Nomenclature (or Mix Description)

The following nomenclature shall be used for mixes used for the eThekweni Municipality.

A mix shall be defined from amongst the following mix types:-

- Sa
- St (currently not applicable for eThekweni roads unless as a special mix (e.g. SMA, EME))
- Special Mixes
 - SMA
 - EME
 - UTFC
 - BRASO
 - Proprietary Mixes

The mix type shall be further defined by the following :-

- the typical conditions under which a mix is to be used (type Sa mixes only)
 - S Standard conditions
 - H Heavy conditions
 - V Very heavy conditions
 - E Extreme conditions

The criteria for these conditions is based on the binder grade selection procedure outlined in Sabita Manual 35 (reproduced below).

Design Traffic (10 ⁶ E80's)	Traffic Speed (km/h)		
	< 20	20 – 80	> 80
< 0.3	S	S	S
0.3 – 3	H	S	S
> 3 - 10	V	H	S
> 10 – 30	E	V	H
> 30 – 100	E	E	V
> 100	E	E	E

Table 2 – Traffic Loading Conditions

- the NMPS of the mix
 - Permitted NMPS sizes are noted in Table 4.
- the critical failure consideration for the mix (optional for Type Sa and EME mixes)
 - F fatigue
 - R permanent deformation (rutting)
- The class of the mix (EME mixes only)
 - Either class 1 or class 2.

The mix types shall thus be labelled as follows:-

- “Mix type”-“Condition”-“NMPS”-“Failure Mode”-“(Mix Class)”
 - Examples
 - Sa-H14F
This is a Sand Skeleton mix for use under Heavy traffic loading and speed conditions with Nominal Maximum Particle Size of 14.0mm that should lend itself to maximizing fatigue resistance.
 - EME-14R(2)
This is an EME class 2 mix with Nominal Maximum Particle Size of 14.0mm designed for resistance to permanent deformation (rutting).

- SMA-14

This is an SMA mix with Nominal Maximum Particle Size of 14.0mm.

Note that the mixes SMA, EME, UTFC and BRASO (etc.) will actually fall into either the type Sa or St mixes. However, these mixes (like the proprietary mixes) are special mixes with very specific characteristics and associated design approaches and are thus specifically and separately named.

PS.ED.2 Mix Design

Mix designs are to be conducted in accordance with the documents noted in Table 4. Further reference should be made to Sabita Manual 24 “User Guide for the Design of Asphalt Mixes” as may be required.

Sand Skeleton Mixes	TRH 8/Sabita Manual 35	Design and use of asphalt in road pavements
Stone Mastic Asphalt (SMA)	TRH 8/Sabita Manual 35	Design and use of asphalt in road pavements (Appendix B)
Enrobé à Module Élevé (EME)	Sabita Manual 33	Design procedure for high modulus asphalt (EME)

Table 3 – Asphalt Mix Design Documents

Asphalt mixes shall be selected from the list of permitted mixes noted in Table 4. Mix requirements will be detailed in the project specification in terms of: -

- Mix description (as outlined in clause 4.2 Mix Nomenclature)
- The required level of design.

Mix Nomenclature	NMPS (mm)			
	7	10	14	20 ¹
Sa-S	X	X	X	
Sa-H		X	X	X
Sa-V			X	X
Sa-E			X	X
SMA		X	X	
EME			X	X
Proprietary and Other Mixes	To hold Agrément South Africa certification or subject to approval by Roads Provision. NMAS as per Manufacturer's specification.			

Table 4 – eThekweni Asphalt Mixes

Special asphalt mixes (e.g. UTFC, proprietary mixes, etc.) shall hold Agrément South Africa fit-for-purpose certification. Alternatively, the use of a particular mix shall be subject to the approval of the Roads Provision Department.

PS.ED.2.1 Materials

Materials shall conform to the requirements and recommendations outlined in Sabita Manual 35.

PS.ED.2.1.1 Binders and Aggregates

The specifications pertinent to specific raw materials should conform to accepted industry standards and shall be documented in the Asphalt Mix Design Report. These specifications shall be used for quality management purposes. Any deviations from standard industry practice as outlined in Sabita Manual 35 shall be documented in the Asphalt Mix Design Report and shall specifically be brought to the attention of the Roads Provision Department.

PS.ED.2.1.2 Reclaimed Asphalt.

The use of reclaimed asphalt (RA) is permitted subject to the limitations noted under the specific mix types. The inclusion of RA in a mix design shall be documented in the Asphalt Mix Design Report.

The incorporation of reclaimed asphalt into the mix should be guided by Sabita Manual 36/TRH 21 "Use of reclaimed asphalt in the production of asphalt".

PS.ED.2.1.3 Warm Mix Asphalt Technologies/Additives

The use of Warm Mix Asphalt (WMA) is permitted (and preferred) and shall be documented in the Asphalt Mix Design Report. The use of Warm Mix Asphalt should be guided by Sabita Manual 32 "Best practice guideline for warm mix asphalt".

PS.ED.2.2 Mix Design

No mixes may be supplied without submission of an Asphalt Mix Design Report and acceptance thereof by the Roads Provision Department.

The mix design process shall consist of a laboratory design, a plant trial and (if required) a paved trial for every mix supplied.

PS.ED.2.2.1 Specific Mix Design Requirements**a) Sand Skeleton Mixes**

The reclaimed asphalt (RA) content of sand skeleton mixes shall be limited to 50% maximum.

The following additional requirements and guidelines should be taken into consideration for any particular level of mix design: -

b) Level IA Design

The design should also take into consideration the recommendations of Sabita Manual 27 "Guidelines for thin hot mix asphalt wearing courses on residential streets".

Further to Sabita Manual 35 Table 23 (VMA), the VMA for the 7.1mm NMPS mix shall be 16% (target design voids 4%).

Mixes shall comply with the requirements noted in Tables 22, 23 and 24 of Sabita Manual 35. Mixes shall further comply with the requirements noted Table 5 (below).

Test	Requirement	Test Method / Reference
Filler/Binder Ratio	1.3 max.	Sabita Manual 35 cl. 4.3.4 Note 4.3
Binder Film Thickness (μm)	7.5 min.	Sabita Manual 35 cl. 5.5.1(4)(a)
Modified Lottman (TSR)	0.8 min.	ASTM D 4867 M
Air Permeability (@ 7% Voids) ($\times 10^{-8}\text{cm}^2$)	1.0 max.	TRH 8 App C
Marshall Stability, Flow and Quotient	Report	SANS 3001-AS2

Table 5 – Empirical Performance Tests Level 1A**c) Level IB Design**

A maximum of 10% natural sand (by mass of mix aggregates) may be used in sand skeleton mix types designed to Level IB.

Although Sabita Manual 35 requires the use of a gyratory compactor for laboratory mix evaluation, the use of Marshall compaction will however be permitted. Gyratory compaction is nevertheless the preferred method of compaction. Briquettes for mix evaluation shall be compacted at the compaction effort noted in Table 6.

Gyratory	Marshall
AASHTO T 312	SANS 3001 AS1
N_{design}	No. Blows
75	75+75

Table 6 – Volumetric Compaction Requirements

The empirical performance requirements for Level IB mixes shall be as indicated in Sabita Manual 35 save that the mix durability requirements noted in Table 28 of Sabita Manual 35 shall be altered to reflect a minimum Modified Lottman value of 0.8 for both Base and Wearing Course mixes.

d) Level II Design

Although Sabita Manual 35 recommends the use of a Level III design for traffic loading in excess of 30 million E80's, within an urban environment there are a number of roads falling within this traffic loading scenario but for which a Level III design is not warranted. The Level II design approach is thus acceptable for roads with this higher traffic loading. However, the laboratory compaction will be as noted in Table 7.

Design Traffic (E80's)	N_{design}
3 to 30 million	100
> 30 million	125

Table 7 – Level II Laboratory Compaction Requirements

Therefore, in order to identify the requisite compaction parameters for a particular E80 design traffic loading, the Level II design will be labelled in the project specification as follows :-

- Level II(A)

Level II(A) will cater for an E80 design traffic loading of less than or equal to 30 million E80's.

- Level II(B)

Level II(B) will cater for an E80 design traffic loading of greater than 30 million E80's.

The mix durability requirements noted in Table 28 of Sabita Manual 35 shall be altered to reflect a minimum Modified Lottman value of 0.8 for both Base and Wearing Course mixes.

e) Level III Design

Level III designs (if required) will only be conducted on roads with a design traffic loading of greater than 30 million E80's in line with the recommendations of Sabita Manual 35.

The mix durability requirements noted in Table 28 of Sabita Manual 35 shall be altered to reflect a minimum Modified Lottman value of 0.8 for both Base and Wearing Course mixes.

f) Stone Mastic Asphalt Mixes

Stone Mastic Asphalt (SMA) mix designs are to be conducted in accordance with the guidelines set out in Sabita Manual 35 "Design and use of asphalt in road pavements – Appendix B".

SMA mixes are permitted for two NMPS:-

- 10mm
- 14mm

The mix design should ensure that the fine aggregate mortar should not induce dilation of the coarse aggregate stone skeleton after compaction on site thereby ensuring coarse aggregate interlock. Coarse aggregate for both NMPS shall be defined as all material retained on the 5mm sieve.

The use of "natural" sand and reclaimed asphalt (RA) shall not be permitted in SMA mixes.

The stability of the fine aggregate mortar will require enhancement with either cellulose fibre or through modification of the binder or both.

The SMA mix shall also conform to the requirements in Table 8.

Design Air Void Content (%)	4.0
Voids in Mineral Aggregate (VMA) (Min.)	17
Modified Lottman (TSR) (Min.)	0.7
Schellenberg Drainage Test (%) (Max.)	0.3
Air Permeability (@ 7% Voids) ($\times 10^{-8}\text{cm}^2$) (Max.)	1.0
$\text{VCA}_{\text{mix}}^1$ (%)	$< \text{VCA}_{\text{drc}}^2$

Table 8 – SMA Mix Specifications

Note 1. VCA_{mix} is the voids in coarse aggregate (>5mm) of the compacted mix.

Note 2. VCA_{drc} is the voids in coarse aggregate (>5mm) of the dry rodded coarse aggregate.

SMA mixes shall also conform to the permanent deformation requirements noted in Table 33 of Sabita Manual 35.

The mix design document should clearly document the process followed to meet the desired SMA characteristics.

g) Enrobé à Module Élevé (EME) Asphalt Mixes

EME mix design are to be conducted in accordance with the guidelines set out in Sabita Manual 33 “Interim design procedure for high modulus asphalt”.

EME mixes are permitted for two NMPS:-

- 14mm
- 20mm

The use of “natural” sand shall not be permitted in EME mixes.

The reclaimed asphalt (RA) content of EME mixes shall be limited to 20%.

The mix design document should clearly document the process followed to meet the desired EME characteristics.

h) Warm Mix Asphalt

Should a Warm Mix Asphalt be used in the mix, the mix design shall incorporate the use of such a technology/additive in the mix design process. Any consequential deviations from the guidelines set out in Sabita Manual 35 “Design and use of asphalt in road pavements – Appendix B”, Sabita Manual 33 “Design procedure for high modulus asphalt (EME)” or standard industry practice shall be brought to the attention of the Roads Provision Department and shall be documented in the mix design report.

The use of Warm Mix Asphalt should be guided by Sabita Manual 32 “Best practice guideline for warm mix asphalt”.

i) Asphalt Mix Design Report

Once satisfied that the laboratory design, the plant and (if required) paved trials meet the specified mix requirements, the Manufacturer shall submit an Asphalt Mix Design Report recording the essential information relating to the design. This shall be recorded on the relevant COTO “D3” form **and shall be supplemented with a report documenting any further information required in terms of this Technical Note.**

The final mix parameters (i.e. the Job Mix Formula (JMF)) will be based on the test results for the plant trial and will be used for production quality control and acceptance purposes.

The Manufacturer shall include the following “mix characteristics” as a part of his Mix Design Report submission: -

- A unique identification number for every mix design
- The use of any Warm Mix Asphalt technology/additive. The Manufacturer shall document the name and type of technology/additive to be used together with any other technical information pertinent to its use in the asphalt mix. The Manufacturer shall further comment on any modifications to the “standard” mix design process consequential to the use of the Warm Mix Asphalt technology/additive.
- The recommended maximum mix temperature in the truck at the exit from the plant (in line with industry norms)
- The recommended minimum mix temperature in the truck on delivery (in line with industry norms)
- The minimum recommended mix temperature for compaction of the mix on site (in line with industry norms)
- Comment on any asphalt mix characteristics that should be brought to the attention of the asphalt paving/laying team on site (e.g. EME asphalt mix longitudinal joint construction)

Should substantial changes to material types and properties occur, the asphalt mix designs

for affected mixes shall be reviewed and where necessary re-constituted and resubmitted for approval.

j) Mix Design Acceptance Process

It is not necessary for a new mix design to be compiled for every project. The Manufacturer may supply proof that an existing mix design is still current and has already been accepted by the Roads Provision Department. In the case of the submission of a new mix design, the Manufacturer shall submit his proposed mix design to the Roads Provision Department for acceptance of the mix design at least 2 weeks prior to initial supply of any particular mix.

Upon request by the Roads Provision Department, the Manufacturer shall supply samples of raw materials and any other relevant information as may be requested to facilitate acceptance of the mix design.

Once satisfied with the content of the mix design, the Senior Manager: Pavement & Geotechnical Engineering (or his nominee) will give signed acceptance for the mix.

k) Mix Design Review

Every mix design is to be reviewed at least annually. The review should include verification of the asphalt mix through testing of basic raw material properties and mix characteristics.

Should the binder, aggregate or mix characteristics of any particular mix differ significantly from the characteristics obtained in the initial mix design, then the mix shall be re-designed to meet the relevant volumetric and performance characteristics. In the event of a dispute over the significance of a particular characteristic, the Manufacturer shall undertake the appropriate performance test to prove compliance with the specification.

PS.ED.2.3 Asphalt Production

PS.ED.2.3.1 Mixing Plant.

Asphalt shall be manufactured through a plant capable of meeting the full design requirements of any particular mix. The plant shall be operated and kept in a well maintained condition as directed by the Quality Management System. Records of such maintenance shall be made available on request. The plant shall be approved by the Roads Provision Department.

Sufficient reserves of raw materials shall be held at the plant for all mixes being supplied to the eThekweni Municipality to prevent delays in construction projects. It will be incumbent on the plant manager to ascertain demand and time frames from Contractors or Municipal Departments to whom they are supplying mix.

All cold aggregates shall be stockpiled and protected in a manner that precludes the possibility of aggregate contamination from adjacent stockpiles, from the underlying ground or from weather conditions.

Binder storage tanks shall be provided and managed to ensure that there is no risk of contamination of different binder types. Binder storage tanks shall be heated and the binder circulated in such a manner that the binder is not degraded during heating. The heating and circulation of binders should conform to the recommendations of the binder supplier.

The plant and its operation shall conform to the requirements of the following legislation: -

- Occupational Health and Safety Act

- National Environmental Management : Air Quality Act

PS.ED.2.3.2 Quality Control.

The Manufacturer shall have an active Quality Management System in place compliant with the quality processes outlined in Sabita Manual 35. The quality of mix produced shall be monitored as directed in the Manufacturer's Quality Management System. The asphalt mix constituents (i.e. binder and aggregates), and the asphalt mix produced shall be checked for compliance and consistency on a regular basis through routine process control testing. The results of such testing shall be made available for review by the Roads Provision Department at all times.

a) Quality Management System

The Quality Management System (QMS) should include documentation outlining the asphalt mix design process, the annual mix review process and processes pertaining to delivery of the asphalt mix.

The QMS shall also include any agreed frequency of split sampling of either raw mix constituents or asphalt mixes (prepared as agreed) with the Roads Provision Department. Such samples are to be delivered to the Roads Provision's Bitumen and Asphalt Laboratory located at the Roads Provision Asphalt Plant in uMhlathuzana Road. All samples shall be adequately and uniquely labeled so that the location of any related mix is readily traceable.

The QMS shall also document the processes to be followed whenever a deviation from specifications is identified. The Manufacturer shall provide full rectification of any work undertaken with such asphalt mix or materials.

The plant laboratory should preferably be SANAS accredited for the tests undertaken. However, should the laboratory not be SANAS accredited, the laboratory will need to be approved by the Roads Provision Department.

In line with these processes, the QMS should include as a minimum the material characterisation tests included in Table 10 for every type of mix supplied.

Quality Control Tests			Minimum Test Frequency
Binder	Penetration		Every batch delivered
	Softening Point		Every batch delivered
	SA PG Binder Classification		1 per 6 months
Aggregate	Ag gre gate	Aggregate Grading	Every batch delivered
		Flakiness Index (Max.)	1 per month
		Aggregates BRD, ARD and Water Absorption	1 per month
		ACV, 10%FACT	1 per month
		Polished Stone Value (Coarse Aggregates)	1 every year per stone type and source
	Ag gre gate	Aggregate Grading	Every batch delivered
		Aggregates BRD, ARD and Water Absorption	1 per month
		Sand Equivalent (Fine Aggregates)	Every batch delivered
		Methylene Blue Adsorption Value	1 per month

Asphalt Mix	Temperature of Mix	In the truck at the exit weighbridge	Every load
		In the truck at the point of delivery	Every load
	Binder Content		1 test per 200 tons of output or part thereof per day
	Extracted Mix Aggregate Grading Analysis		1 test per 200 tons of output or part thereof per day
	Voids Analysis (Bulk Relative Density and Maximum Theoretical Relative Density)		1 test per 200 tons of output or part thereof per day

Table 9 – Test Frequencies**b) Test Methods**

The test methods used in the design of asphalt mixes and quality management in the production of asphalt should be in line with those noted in Sabita Manual 35. However, the determination of the bulk density of asphalt mix in terms of SANS 3001-AS10 shall be modified as follows.

i. Asphalt Briquette/Core Bulk Density Test Method

The bulk density of compacted asphalt mixtures shall be determined in accordance with SANS 3001-AS10:2011 Edition 1 save that the measurement of the volume of the specimen as stated in clause 6.2 shall not apply.

For general measurement of volume for non-absorptive mixes (generally VIM < 6%), the method outlined in clause 6.4 of SANS 3001-AS10 shall be used.

However, for mixes suspected of being absorptive/porous, or in the event of a dispute over mix density, briquette or core density shall be determined by either the paraffin wax coating method (ASTM D 1188) or the automatic vacuum sealing method (ASTM D 6752).

The density of porous mixtures (generally VIM >15%) shall be measured in accordance with SANS 3001-AS10 with the measurement of volume as specified in clause 6.6.

c) Process Control

The temperature of the mix taken in the truck at the exit to the plant shall not exceed the value stated in the mix design. Furthermore, the temperature of the mix taken in the truck on delivery shall not be less than the value stated in the mix design.

Quality checks on mix production will be based on the Job Mix Formula (JMF) for the approved mix design. Tolerances on variation from the JMF are given in Table 10.

			Permissible Deviation from JMF (%)	
			Individual Results	Average of 3 Consecutive Results
Aggregate Fraction - Grading	Sieve Size (mm)	28	± 5.0	± 3.0
		20	± 5.0	± 3.0
		14	± 5.0	± 3.0
		10	± 5.0	± 3.0
		7.1	± 5.0	± 3.0
		5	± 4.0	± 2.5
		2	± 4.0	± 2.5
		1	± 4.0	± 2.5
		0.6	± 4.0	± 2.5
		0.3	± 3.0	± 2.0
		0.15	± 2.0	± 1.5
		0.075	± 1.0	± 1.0
Voids in the Mix (@ design compaction)			± 1.5	± 1.0
Binder Content	General Mixes (Sa, SMA, EME, etc.)	± 0.3	± 0.2	
	Gap Graded & Bitumen Rubber	± 0.4	± 0.3	

Table 10 – Job Mix Formula Tolerances

All process control testing undertaken by the Manufacturer shall be signed off by the responsible person identified in the QMS and shall be made available to the Roads Provision Department.

All process control test results shall be referenced back to the unique Mix Design reference number.

Mix extraction gradings shall be made available within 48 hours of the asphalt being manufactured.

Binder content and void content shall be made available by 08:00am on the day following manufacture of the asphalt.

This specification covers the manufacture of hot/warm mix asphalt. There are a total of 15 hot/warm asphalt mixes covered in this specification:-

- 9 sand skeleton mixes
 - Designated “Sa”
 - 3 NMA mix sizes
 - “10”, “14” mm and “20” mm
 - For use in :-
 - Standard traffic loading and speed conditions (“S”)
 - Heavy traffic loading and speed conditions (“H”)
 - Very Heavy traffic loading and speed conditions (“V”)
 - Extreme traffic loading and speed conditions (“E”)
- 4 SMA (stone skeleton) mixes
 - Designated “SMA”
 - 2 NMA mix sizes
 - “10” mm and “14” mm
 - For use in :-
 - Very Heavy traffic loading and speed conditions (“V”)
 - Extreme traffic loading and speed conditions (“E”)

- 2 EME mixes
 - Designated “EME”
 - 2 NMAS mix sizes
 - “14” mm and “20” mm
 - For use in :-
 - Extreme traffic loading and speed conditions (“E”)

(An “Sa-H14” mix is thus a Sand Skeleton mix of Nominal Maximum Aggregate Size 14.0mm to be used in Heavy traffic loading and speed conditions. A description of every mix required can be found in Table 5).

Reference to the following standard specifications, guideline documents and codes of practice (Table 1) shall be deemed to be references to the latest issues of the relevant documents:-

SANS 9001	Quality management systems – Requirements
SANS 4001-BT1	Penetration grade bitumen
SANS 4001-BT3	Anionic bitumen road emulsions
SANS 4001-BT4	Cationic bitumen road emulsions
SANS 1083	Aggregates from natural sources
SANS 824	Lime for soil stabilization
SANS 50197-1	Cement – Part 1:Composition, specification and conformity criteria for common cements
SANS 1491:Part 1	Portland cement extenders - Part 1:Ground granulated blast-furnace slag
SANS 1491:Part 2	Portland cement extenders - Part 2:Fly ash
Act 85 of 1993	Occupational health and safety act
Act 39 of 2004	National environmental management : Air quality act
Sabita Manual 5	Guidelines for the manufacture and construction of hot mix asphalt
Sabita Manual 27	Guidelines for thin hot mix asphalt wearing courses on residential streets
Sabita Manual 32	Best practice guideline for warm mix asphalt
Sabita Manual 33	Interim design procedure for high modulus asphalt
Sabita Manual 35	Design and use of asphalt in road pavements
Sabita TG1	The use of modified bituminous binder in road construction
TRH 21	Hot mix recycled asphalt

Table 1 Reference and Standard Specifications

PS.ED.3 Materials**PS.ED.3.2 Bituminous Binder**

Binder selection shall be guided by both the asphalt mix requirements outlined in section 4 and the South African PG Binder Classification System.

Straight run bituminous binders shall conform to SANS 4001-BT1 and shall be selected from penetration grades 10/20, 15/25, 35/50 or 50/70.

Modified binders shall be selected from A-E1, A-E2, A-P1 A-H1 or A-H2 and shall comply with the requirements of Tables 7 and 9 respectively from the Sabita Technical Guideline TG1.

The binder penetration grade, the type of modifier used (as applicable) and the SA PG Binder Classification shall be indicated in the mix design report.

PS.ED.3.3 Coarse Aggregate

Coarse aggregate shall comprise single sized, clean, unweathered material and shall be free from organic matter and other deleterious substances. The aggregate shall conform to the requirements of Table 2 "Aggregate Quality Requirements". The grading and dust content of the aggregate shall comply with the requirements of Table 4302/8 of the COLTO Standard Specifications for Road and Bridge Works for State Road Authorities (1998).

PS.ED.3.4 Fine Aggregate

Fine aggregate shall consist of the mineral matter passing the 5,00 mm sieve and retained on the 0,075 mm sieve and shall consist predominantly of freshly crushed aggregate or clean, natural hard sand. Fine aggregate shall conform to the requirements of Table 2 "Aggregate Quality Requirements". Material derived from the mechanical crushing or milling of rock shall be well graded between 5.0mm and 0.075mm. The grading and dust content of material derived from the natural disintegration of rock shall comply with the requirements of SANS 1083 Table 1 (Column 2). The use of natural sands is limited or prohibited in certain asphalt mixes. These limitations are quantified under section 3.2.5 "Aggregate Blends".

PS.ED.3.5 Filler

Filler shall comprise the material predominantly passing the 0.075 mm sieve and shall consist of either inert material (crushed rock fines) or an approved active filler or a combination thereof.

Active filler shall consist of either milled blast furnace slag, hydrated lime, portland cement, fly-ash or a combination of these materials. Active fillers shall conform to the relevant SANS specification for the particular material. Filler shall also conform to the requirements of Table 2 "Aggregate Quality Requirements".

The permissible active filler content in any asphalt mix shall be no more than 2% by mass of mix aggregates.

PS.ED.3.7 Reclaimed Asphalt

Fragments of asphalt obtained from the road or from stockpiles of discarded asphalt may be used in the manufacture of asphalt mixes. Reclaimed asphalt (RA) shall be characterized

and processed in accordance with the recommendations set out in TRH 21 “Hot mix recycled asphalt”.

The RA content of asphalt mixes shall be limited as noted in Table 3.

Mix Type	Maximum RA Content
Sand Skeleton Mixes	50%
SMA	0%
EME	20%

Table 3 Permissible RA Content

PS.ED.3.8 Aggregate Blends

Aggregates shall be blended in such a manner so as to produce an asphalt mix conforming to the requirements of each particular mix type and nominal maximum particle size. The required aggregate blending will be achieved through the mix design process.

A. Sand Skeleton Mixes

Aggregate gradings are required for 3 nominal maximum particle size (NMPS) mixes (ie. 10mm, 14mm and 20mm). The aggregate grading for these mixes shall be guided by the control points in Table 4.

Sieve Size (mm)	Percent Passing					
	Nominal Maximum Particle Size (NMPS)					
	10mm		14mm		20mm	
	Min.	Min.	Min.	Max.	Min.	Max.
37.5						
28					100	
20			100		80	100
14	100		80	100		85
10	80	100		85		
7.1		85				
5						
2	32	67	28	58	23	49
1						
0.6						
0.3						
0.15						
0.075	2	10	2	10	2	8

Table 4 Sand Skeleton Asphalt Mix Grading Control Points

A maximum of 10% natural sand (by mass of mix aggregates) may be used in sand skeleton mix types Sa-H, Sa-V and Sa-E.

The reclaimed asphalt (RA) content of sand skeleton mixes shall be limited to 50% maximum as noted in Table 3.

B. Stone Mastic Asphalt (SMA) Mixes

Stone Mastic Asphalt is a stone skeleton mix type. The aggregate grading for SMA mixes shall be guided by the requirement that the stone skeleton coarse aggregate structure is not dilated by the mastic in the voids of the stone skeleton structure. The use of “natural” sand shall not be permitted in SMA mixes.

The use of reclaimed asphalt (RA) shall not be permitted in SMA mixes.

SMA grading blends are required for two SMA NMPS mixes :-

- 10mm
- 14mm

C. Enrobé à Module Élevé (EME) Mixes

EME aggregate gradings shall be guided by the requirements outlined in Sabita Manual 33 “Interim design procedure for high modulus asphalt”.

The use of “natural” sand shall not be permitted in EME mixes.

The reclaimed asphalt (RA) content of EME mixes shall be limited to 20% maximum as noted in Table 3.

EME grading blends are required for two EME NMPS mixes:-

- 14mm
- 20mm

D. Warm Mix Asphalt Technologies/Additives

Warm Mix Asphalt (WMA) technologies/additives shall conform to the appropriate requirements outlined in SABITA Manual 32 “Best practice guideline for warm mix asphalt” and shall be approved prior to use. The contractor shall provide the Roads Provision Department with the name and type of technology/additive to be used together with any other technical information pertinent to its use in the asphalt mix.

Aggregate Property		Coarse Aggregate		Fine Aggregate (Crushed Rock)	Fine Aggregate (Natural Sand) ¹	Combined Total Fine Aggregate	Inert Filler	Active Filler
Parent Material		Clean unweathered crushed rock		Clean unweathered crushed rock	Clean natural fines not obtained from crushed parent rock	-	Unweathered rock dust	Approved commercial non-plastic material
		Sand Skeleton Mixes (Sa, EME)	Stone Skeleton Mixes (SMA)					
Grading		COLTO Standard Specifications for Road and Bridge Works for State Road Authorities (1998) Table 4302/8		Well graded between 5.0mm and 0.075mm sieves	SANS 1083 Table 1 (Column 2)	Passing 5.0mm sieve	$P_{0.075} > 75\%$	$P_{0.075} > 75\%$
ACV (%) (max.)		25	21	25 (Parent rock)	-	-	-	-
10% FACT (Dry) (Min.)		160 kN	210 kN	-	-	-	-	-
10%FACT (Wet) (Min.)		75% of 10% FACT (Dry) Value	75% of 10% FACT (Dry) Value	-	-	-	-	-
Flakiness Index (Max.)	20mm & 14mm Aggregate	25		-	-	-	-	-
	10mm & 7.1mm Aggregate	30		-	-	-	-	-
	SMA Mixes	20		-	-	-	-	-
Polished Stone Value (Min.)		50		-	-	-	-	-
Water Absorption (%) (Max.)		1.0		1.5	1.5	1.5	-	-
Sand Equivalent (%) (Min.)		-		40	River	Pit	-	-
					80	50		-
Methylene Blue Adsorption Value (Max.)		-		0.7	0.7	0.7	-	-
Permissible Content (% by Mass of Mix Aggregates)		-		-	0 - 10	-	-	0 – 2

1. Natural sand is not permitted in SMA mixes.

Table 2 Aggregate Quality Requirements

PS.ED.4 Plant**PS.ED.4.1 Mixing Plant**

Asphalt shall be manufactured through a batch-mixing or drum-mixing plant (approved by the Roads Provision Department) such that the requirements of this specification can be met in full. The plant shall be operated and kept in a well maintained condition as directed by the Quality Management System. Records of such maintenance shall be made available on request.

All cold aggregates shall be stockpiled in a manner that precludes the possibility of aggregate contamination. At the very least aggregate stockpiles shall be physically separated on concrete slabs. Undue wetting/saturation of (particularly fine) aggregates shall also be prevented through covering (particularly fine) aggregate stockpiles with reinforced waterproof covers at all times when mixing is not in progress. Natural sand aggregates shall be pre-screened through a 13 mm screen before being fed into the cold feed hoppers.

Sufficient binder storage tanks shall be provided to ensure that adequate reserves are maintained for each binder type held without risk of contamination of binders. Binder storage tanks shall be heated in such a manner that the binder is not degraded during heating. The tanks shall also incorporate a circulating system for the binder.

The plant control panel shall enable the plant operator to have simultaneous view of the critical components of the plant inclusive of :-

- Binder storage temperature
- Cold hopper feed settings
- Hot aggregate bin masses (as appropriate)
- Binder feed rate
- Plant speed (as appropriate)
- Mixing temperature

The plant and its operation shall also conform to the requirements of the following legislation:-

- Occupational Health and Safety Act
- National Environmental Management : Air Quality Act

PS.ED.4.4 Quality Control

The quality of mix produced shall be monitored as directed in the contractor's Quality Management System. The asphalt mix constituents (i.e. binder and aggregates), and the asphalt mix produced shall be checked for compliance and consistency on a regular bases through routine process control testing. The results of such testing shall be available for review by the Roads Provision Department at all times.

A. Quality Management System

The Quality Management System (QMS) should include documentation outlining the asphalt mix design process, the annual mix review process and processes pertaining to delivery of the asphalt mix.

The QMS shall also include any agreed frequency of split sampling of either raw mix constituents or asphalt mixes (prepared as agreed) with the Roads Provision Department. Such samples are to be delivered to the eThekweni Municipality's Bitumen and Asphalt Laboratory located at the Roads Provision Asphalt Plant in uMhlathuzana Road. All samples shall be adequately and uniquely labeled so that the location of any related mix is readily traceable.

The QMS shall also document the processes to be followed whenever a deviation from specifications is identified. The Contractor shall provide full rectification of any work undertaken with such asphalt mix or materials.

Where applicable, testing is to be conducted using the SANS 3001 series of test methods.

The plant laboratory should be SANAS accredited for the tests undertaken. However, should the laboratory not be SANAS accredited, the Roads Provision Department will need to approve the laboratory for any test result to be considered valid.

In line with these processes, the QMS should include as a minimum per mix design, the material characterisation tests included in Table 21.

Quality Control Tests			Minimum Test Frequency
Binder	Penetration		Every batch delivered
	Softening Point		Every batch delivered
	SA PG Binder Classification		1 per 6 months
Aggregate	Coarse Aggregate	Aggregate Grading	Every batch delivered
		Flakiness Index (Max.)	1 per month
		Aggregates BRD, ARD and Water Absorption	1 per month
		ACV, 10%FACT	1 per month
		Polished Stone Value (Coarse Aggregates)	1 every year per stone type and source
	Fine Aggregate	Aggregate Grading	Every batch delivered
		Aggregates BRD, ARD and Water Absorption	1 per month
		Sand Equivalent (Fine Aggregates)	Every batch delivered
		Methylene Blue Adsorption Value	1 per month
Asphalt Mix	Temperature of Mix	In the truck at the exit weighbridge	Every load
		In the truck at the point of delivery	Every load
	Bitumen Content		1 test per 200 tons of output or part thereof per day
	Extracted Mix Aggregate Grading Analysis		1 test per 200 tons of output or part thereof per day
	Voids Analysis (Bulk Relative Density and Maximum Theoretical Relative Density)		1 test per 200 tons of output or part thereof per day

Table 21 Test Frequencies**B. Process Control**

The mix temperature of the mix taken in the truck at the exit to the plant shall not exceed the value stated in the mix design. Furthermore, the temperature of the mix taken in the truck on delivery shall not be less than the value stated in the mix design.

Quality checks on mix production will be based on the Job Mix Formula (JMF) for the approved mix design. Tolerances on variation from the JMF are given in Table 22.

		Permissible Deviation from JMF (%)	
		Individual Results	Average of 3 Consecutive Results
Aggregate Fraction - Grading	Sieve Size (mm)		
	28	± 5.0	± 3.0
	20	± 5.0	± 3.0
	14	± 5.0	± 3.0
	10	± 5.0	± 3.0
	7.5	± 5.0	± 3.0
	5	± 4.0	± 2.5
	2	± 4.0	± 2.5
	1	± 4.0	± 2.5
	0.6	± 4.0	± 2.5
	0.3	± 3.0	± 2.0
	0.15	± 2.0	± 1.5
	0.075	± 1.0	± 1.0
<u>Voids in the Mix (@ design compaction)</u>		± 1.5	± 1.0
<u>Binder Content</u>		± 0.3	± 0.2

Table 22 Mix Production Property Limits

All process control testing undertaken by the contractor shall be signed off by the responsible person identified in the QMS and shall be made available to the Roads Provision Department.

- All process control test results shall be referenced back to the unique Mix Design reference number.
- Mix extraction gradings shall be made available within 48 hours of the asphalt being manufactured.
- Binder content and void content shall be made available by 08:00am on the day following manufacture of the asphalt.

Should the test results not be provided as required or should the results fall outside the applicable specifications, the Roads Provision Department reserves the right to suspend any supply until the results are produced and the mix is accepted.

The Contractor shall be responsible for rectification of any work completed (or partially completed) with asphalt mix that does not meet the specification to the satisfaction of the Roads Provision Department. The processes related to the rectification of such work shall be outlined in the QMS.

C. Acceptance Testing

After reviewing the results of the process control testing, the Roads Provision Department may elect to conduct their own testing of the binder, aggregates or asphalt mix produced. A copy of test results will be submitted to the Contractor as soon as they are available.

Should the acceptance tests indicate that the mix (or any part thereof) is not to specification, the cost of any re-test by the Council shall be to the Contractor's account and shall be deducted from any payments owed to the Contractor.

D. On Site Mix Problems

The contractor shall also make himself available on site should the workability and compaction of the mix during the paving/laying operation be problematic in order to assist in trouble-shooting the cause of such problems. If the root cause of the problem is related to the asphalt mix design, the contractor shall re-evaluate his mix design to correct such issues and re-submit his mix design for approval.

PS.ED.5 Construction

PS.ED.5.1 Asphalt Mix Requirements

There are a total of 15 mixes required: -

- 9 sand skeleton mixes (i.e. continuously graded mixes)
- 4 SMA (stone skeleton) mixes
- 2 EME mixes

The required asphalt mixes are depicted in Table 5. However, traffic condition risk profiles require additional higher levels of design for particular mixes (Table 6).

Sand Skeleton Mixes (Sa)		Nominal Maximum Particle Size		
Traffic Condition Category		10.0	14.0	20.0
S	Standard Conditions	Sa-S10	Sa-S14	
H	Heavy Conditions	Sa-H10	Sa-H14	Sa-H20
V	Very Heavy Conditions		Sa-V14	Sa-V20
E	Extreme Conditions		Sa-E14	Sa-E20
Design Level	Mix Types			
Level I	Sa-S10, Sa-S14			
Level II	Sa-H10, Sa-H14, Sa-H20, Sa-V14, Sa-V20			
Level III	Sa-E14, Sa-E20			

Stone Mastic Asphalt (SMA)		Nominal Maximum Particle Size		
Traffic Condition Category		10.0	14.0	20.0
S	Standard Conditions			
H	Heavy Conditions			
V	Very Heavy Conditions	SMA-V10	SMA-V14	
E	Extreme Conditions	SMA-E10	SMA-E14	

Enrobé à Module Élevé (EME)		Nominal Maximum Particle Size		
Traffic Condition Category		10.0	14.0	20.0
S	Standard Conditions			

H	Heavy Conditions			
V	Very Heavy Conditions			
E	Extreme Conditions		EME-E14	EME-E20

Table 5 Asphalt Mix Requirements

Traffic Volume (million E80's)	Traffic Condition Category		
	Traffic Speed (km/h)		
	< 20	20 - 70	> 70
< 3	H	S	S
3 to 10	V	H	H
10 to 30	E	V	V
> 30	E	E	E

Table 6 Traffic Condition Risk Profiles

The typical use of various mix types and mix NMPS is portrayed in Table 7.

Asphalt Mix Use			Mix Type
Mix Nominal Maximum Particle Size (NMPS)			
10.0	14.0	20.0	
Patching/ Handwork			Sa
Wearing Course (Paved)			Sa, SMA
	Base Course (Paved)		Sa, EME

Table 7 Typical Mix Use

PS.ED.5.8 Asphalt Mix Design

Asphalt mix designs are required for every mix supplied. Mix designs for each mix type are to be conducted in accordance with the guidelines noted in Table 8.

Sand Skeleton Mixes	Sabita Manual 35	Design and use of asphalt in road pavements
Stone Mastic Asphalt (SMA)	Sabita Manual 35	Design and use of asphalt in road pavements (Appendix B)
Enrobé à Module Élevé (EME)	Sabita Manual 33	Interim design procedure for high modulus asphalt

Table 8 Asphalt Mix Design Guideline Documents

The mix design process shall consist of a laboratory design, a plant trial and (if required) a paved trial. Once satisfied that the laboratory design and plant and paved trials meet the specified mix requirements, the contractor is to document the final mix parameters (i.e. the Job Mix Formula (JMF)). These parameters will be used for production quality control and acceptance purposes (see Table 9).

Grading
Voids in the Mix (@ design compaction)
Binder Content

Table 9 Mix Parameters for the Job
Mix Formula

The contractor shall also include the following “mix characteristics” as a part of his mix design submission:-

- A unique identification number for every mix design
- The binder storage constraints (e.g. maximum storage times, etc.)
- The type of modifier used and the modified binder characteristics to TG1 (if applicable)
- Binder classification in terms of the SA PG Binder Classification System
- Whether the asphalt mix is using a Warm Mix Asphalt technology/additive. The contractor shall comment on any modifications to the “standard” mix design process consequential to the use of the Warm Mix Asphalt technology/additive.
- The maximum mix temperature in the truck at the exit from the plant (in line with industry norms)
- The minimum mix temperature in the truck on delivery (in line with industry norms)
- The minimum recommended mix temperature for compaction of the mix on site (in line with industry norms)
- Comment on any asphalt mix characteristics that should be brought to the attention of the asphalt paving/laying team on site (e.g. EME asphalt mix longitudinal joint construction)

Should substantial changes to material types and properties occur, the asphalt mix designs for affected mixes shall be reviewed and where necessary re-constituted and re-submitted for approval.

PS.ED.5.8.1 Sand Skeleton Mixes

Designs of sand skeleton asphalt mixes are to be conducted in accordance with the guidelines set out in Sabita Manual 35 “Design and use of asphalt in road pavements”. Designs are to be conducted in accordance with the appropriate level (i.e. I, II and III) as indicated in Table 5.

A. Level I Design

The Level I design is aimed primarily at verification of the mix volumetrics. However, a Level I design is a pre-requisite for the Level II and III designs.

Asphalt mixes shall achieve the volumetric criteria noted in Table 11 at the compaction effort noted in Table 10 (or Tables 14 or 17 as applicable) with a design air void content of 4%.

Traffic Condition Category	Marshall	Gyratory
	SANS 3001 AS1	AASHTO T 312
	No. Blows	N _{design}
Standard (S)	75+45	75

Table 10 Volumetric Compaction Requirements (Level I)

	NMPS		
	10	14	20
VMA (min.)	15	14	13
VFB	65 - 75	65 - 75	65 - 75

Table 11 Mix Design Requirements (Level I)

Asphalt mixes designed at Level I shall meet the requirements for the empirical performance tests noted in Table 12.

Test	Requirement	Test Method
Modified Lottman (TSR)	0.8 min.	ASTM D 4867 M
Indirect tensile strength (@ 25°C)	900 kPa - 1 650 kPa	ASTM D 6931-07
Dynamic creep (@ 40°C)	10 MPa min.	CSIR RMT 004
Water permeability	0.1mm/s - 4 mm/s	EN 12697-19
Air Permeability (@ 7% Voids) (x 10 ⁻⁸ cm ²)	1.0 max.	TRH 8 App C
Marshall Stability, Flow and Quotient	Report	SANS 3001-AS2

Table 12 Empirical Performance Tests (Level I)**A1. Particular Mix Requirements – Mix Sa-S10**

Mix Sa-S10 is to be utilized for lightly trafficked residential streets and patching (handwork). Due attention should be paid to the recommendations of Sabita Manual 27 “Guidelines for thin hot mix asphalt wearing courses on residential streets “ in the design of mix “Sa-S10”. The additional mix characteristics noted in Table 13 are also required.

	NMPS
	10
Filler/Binder Ratio (Max.)	1.3
Binder Film Thickness (Min.)	7.5

Table 13 Mix Design Requirements**B. Level II Design**

The compaction requirements for the Level I design as a precursor to the Level II performance design shall be as noted in Table 14. The design air void content shall be 4%.

Traffic Condition Category	Marshall	Gyratory
	SANS 3001 AS1	AASHTO T 312
	No. Blows	N _{design}
Heavy (H) & Very Heavy (V)	-	100

Table 14 Volumetrics Compaction Requirements (Level II)

In addition to meeting the mix requirements outlined in the Level I design, the mix design at Level II shall meet the performance characteristics noted in Tables 15 and 16.

Property	Test conditions	Specification	Test method
Workability	Superpave gyratory compactor - air voids after 25 gyrations (max.)	7%	ASTM D 6925
Durability	Modified Lottman test conditions (min.)	0.8	ASTM D 4867M
Stiffness/(dynamic modulus)	Dynamic modulus @ 20°C Loading frequencies of 0.1, 0.5, 1, 5, 10, 25 Hz	Report	AASHTO TP 79
Permanent deformation	HWTT at relevant number of passes	See Table 16	AASHTO T 324
Fatigue	Four-point beam fatigue test @ 10°C, 10Hz to 50% stiffness reduction Strain levels 200, 400, 600µε	Report	AASHTO T 321

Table 15 Performance Tests (Level II)

Temperature Zone	6mm Rut	Stripping Point
	No. of Passes (Min.)	
PG 58 Zone	16 000	10 000
PG 64 Zone	20 000	10 000

Table 16 Hamburg Wheel Tracking Test Specifications**C. Level III Design**

The compaction requirements for the Level I design as a precursor to the Level III performance design shall be as noted in Table 17. The design air void content shall be 4%.

Traffic Condition Category	Marshall	Gyratory
	SANS 3001 AS1	AASHTO T 312
	No. Blows	N _{design}
Extreme (E)	-	125

Table 17 Volumetrics Compaction Requirements (Level III)

In addition to meeting the mix requirements outlined in the Level I design, the mix design at Level III shall meet the performance characteristics noted in Tables 15 and 16 with the additional test temperatures for Stiffness and Fatigue as indicated in Table 18.

Property	Test conditions	Specification	Test method
Stiffness (dynamic modulus)	Dynamic modulus @ -5, 5, 20, 40, 55°C Loading frequencies of 0.1, 0.5, 1, 5, 10, 25 Hz	Report	AASHTO TP 79
Fatigue	Four-point beam fatigue test @ 5, 10 and 20°C, 10Hz to 50% stiffness reduction Strain levels 200, 400, 600µε	Report	AASHTO T 321

Table 18 Additional Temperatures for Stiffness and Fatigue Tests (Level III)

PS.ED.5.8.2 Stone Mastic Asphalt Mixes

Stone Mastic Asphalt (SMA) mix designs are to be conducted in accordance with the guidelines set out in Sabita Manual 35 "Design and use of asphalt in road pavements – Appendix B".

SMA mixes are required for two NMPS:-

- 10mm
- 14mm

The mix design should ensure that the fine aggregate mortar should not induce dilation of the coarse aggregate stone skeleton mix after compaction on site thereby ensuring coarse aggregate interlock. Coarse aggregate for both NMPS will be defined as all material retained on the 5mm sieve.

The stability of the fine aggregate mortar will require enhancement with either cellulose fibre or through modification of the binder or both.

The compacted mix should form an impervious surfacing meeting the water permeability and air permeability requirements noted in Table 12.

The SMA mix shall also conform to the requirements in Table 19.

Design Air Void Content (%)	4.0
Bitumen Content (Min.)	6.0
Voids in Mineral Aggregate (VMA) (Min.)	17
Modified Lottman (TSR) (Min.)	0.7
Schellenberg Drainage Test (%) (Max.)	0.3
VCA _{mix} ¹ (%)	< VCA _{drc} ²

Note 1. VCA_{mix} is the voids in coarse aggregate (>5mm) of the compacted mix.

Note 2. VCA_{drc} is the voids in coarse aggregate (>5mm) of the dry rodded coarse aggregate.

Table 19 SMA Mix Specifications

SMA type "V" and "E" mixes shall be subjected to and shall conform with the performance test requirements noted in Table 15. SMA type "E" mixes shall be subjected to the additional temperature test requirements noted in Table 18.

The SMA-E10 and SMA-E14 mixes shall conform to the Dynamic Modulus and Fatigue testing requirements noted in Table 20 (EME Performance Criteria).

A mix design is required for each SMA mix. The mix design document should clearly document the process followed to meet the desired SMA characteristics.

PS.ED.5.8.3 Enrobé à Module Élevé (EME) Asphalt Mixes

EME mix design are to be conducted in accordance with the guidelines set out in Sabita Manual 33 “Interim design procedure for high modulus asphalt”.

EME mixes are required for two NMPS:-

- 14mm
- 20mm

Performance criteria should conform to the requirements for a Class 2 EME as depicted in Table 20.

Property	Test	Method	Requirement (Class 2)
Workability ¹	Gyratory compactor (angle 1.25°), air voids after 45 gyrations	ASTM D6926	≤ 6%
Durability	Modified Lottmann, TSR	ASTM D4867	≥ 0.80
Resistance to permanent deformation	RSST-CH, 55°C, 5000 reps	ASTM T320	≤ 1.1% strain
Dynamic Modulus	Dynamic modulus at 10 Hz, 15°C	ASTM TP62	> 16 GPa
Fatigue	Beam fatigue test at 10 Hz, 10°C, to 50% stiffness reduction Strain levels 200, 400, 600µε	ASTM T321	≥ 1x10 ⁶ reps @ 260 µε

Table 20 EME Performance Criteria

EME type “E” mixes shall further be subjected to and shall conform with the performance test requirements for Stiffness (dynamic modulus), Permanent Deformation and Fatigue noted in Table 15 with the additional temperature test requirements noted in Table 18.

A mix design is required for each EME mix. The mix design document should clearly document the process followed to meet the desired EME characteristics.

PS.ED.5.8.4 Warm Mix Asphalt

Should a Warm Mix Asphalt be used in the mix, the mix design shall incorporate the use of such a technology/additive in the mix design process. Any consequential deviations from the guidelines set out in Sabita Manual 35 “Design and use of asphalt in road pavements – Appendix B”, Sabita Manual 33 “Interim design procedure for high modulus asphalt” or standard industry practice shall be brought to the attention of the Roads Provision Department and shall be documented in the mix design report.

PS.ED.5.8.5 Mix Design Approval

No mixes may be supplied without approval of the mix design by the Senior Manager : Pavement & Geotechnical Engineering, Roads Provision Department.

The contractor shall label every mix design with a unique identification number to facilitate traceability of mixes using the mix design.

PS.ED.5.8.6 Mix Design Approval Process

The contractor shall submit his proposed mix design to the Roads Provision Department for acceptance of the mix design at least 2 weeks prior to initial supply of any particular mix.

Upon request by the Roads Provision Department, the contractor shall also supply samples of raw materials. The minimum sample sizes shall be 50 kg for each aggregate type/size and 5 litres of bitumen/binder. The contractor shall also supply any other relevant information as may be requested.

Once satisfied with the content of the mix design, the Senior Manager : Pavement & Geotechnical Engineering (or his nominee) will give signed approval for the mix.

PS.ED.5.8.7 Mix Design Review

Every mix design is to be reviewed at least annually. The review should include verification of the asphalt mix through testing of at least the following characteristics:-

- Binder compliance with SANS 4001-BT1
- Modified binder compliance with TG1
- Binder classification in terms of the SA PG Binder Classification System
- Aggregate and filler compliance with Table 2
- Aggregate BRD, ARD and water absorption
- Mix BRD (@ N_{design}) and MTRD
- Particular mix type characteristics
 - Sand skeleton mixes
 - Level I design mix volumetric and performance characteristics
 - All requirements in Tables 11, 12 and 13 (as applicable) at the appropriate compaction (Table 10 for Level I designs and Table 14 for Level II and III designs).
 - Level II design mix performance characteristics (Table 15)
 - Workability
 - Durability
 - Level III design mix performance characteristics (Table 15)
 - Workability
 - Durability
 - SMA mixes
 - All requirements in Table 19
 - SMA mix performance characteristics (Table 15)
 - Durability
 - EME mixes
 - Mix performance characteristics (Table 20)
 - Workability
 - Durability

Should the binder, aggregate or mix characteristics of any particular mix differ significantly from the characteristics obtained in the initial mix design, then the mix shall be re-designed to meet the relevant volumetric and performance characteristics. In the event of a dispute over the significance of a particular characteristic, the contractor shall undertake the appropriate performance test to prove compliance with the specification.

PS.ED.8 Measurement and Payment

PS.ED.8.2 Asphalt Wearing Course

Replace the existing clause with the following:

The unit of measurement shall be tons (t) and the rate shall cover all amendments outlined in PS.ED1, PS.ED3, PS.ED4 and PS.ED5 as well as the remaining standard specifications that form part of Part ED. The rate shall include for all materials, storage, handling, mixing, transporting, sweeping the previous surface where necessary, spreading, jointing, compacting, protection to adjacent concrete kerbing, paving and testing other than those tests carried out by the Engineer in accordance with the specification.

Add the following new clause:

PS.ED.8.5 Prime Coat

The prime coat shall consist of MC-30 bitumen. No prime coat shall be applied during foggy or rainy weather or when, in the opinion of the Engineer, the wind strength is sufficient to interfere with the spray work. The surface of the base shall be cleaned and approval shall be obtained before any further work is done. A light sprinkling of water may be applied to assist penetration of the prime but care shall be taken to avoid saturating the base or subbase, and causing free water to appear on the surface.

The unit of measurement shall be square metre (m²) and the rate shall include for the provisions of this clause with an application rate of 0.7ℓ/m².

PS.EG SIDEWALKS, FOOTPATHS AND MEDIAN AREAS

Add the following new clause:

PS.EG.8.7 Precast Concrete Steps

Where indicated on the construction drawings, precast concrete steps (Fig.1 Kerbing) 1.0m wide x 0.3m tread x 0.175m high shall be constructed as part of the footpaths on a 75mm concrete base (20MPa/13mm). Refer to Ethekeeni Standard drawing 38581.

The unit of measurement shall be number (No.) and the rate shall include all plant, labour, materials for the construction of the steps. Concrete base measured elsewhere.

Add the following new clause:

PS.EG.8.8 Precast Handrails

Handrails shall be constructed where indicated on the footpath longitudinal sections and shall be fully compliant with Ethekeeni Standard drawing 38581.

The unit of measurement shall be metre (m) and the rate shall include for the supply and the installation of the 50mmØ galvanised iron handrails including all plant, equipment and labour. Posts and concrete base are measured elsewhere.

Add the following new clause:

PS.EG.8.9 Precast Handrail Posts for Footpaths

Precast concrete handrail posts (30MPa/13mm) shall be constructed as indicated on Ethekwini Standard drawing 38581. The height of the post shall be 1.3m and it shall be reinforced with galvanized R10 bars.

The unit of measurement shall be number (No.) and the rate shall include for the supply and installation of the posts including all plant, equipment, labour etc.

Add the following new clause:

PS.EG.8.10 Precast Concrete Bollards

Where indicated on the layout drawings or at the discretion of the Engineer during construction, precast concrete bollards shall be installed on footpaths. The bollard shall be fully compliant with drawing D134C.00-UZ2-104-01-T0.

The unit of measurement shall be number (No.) and the rate shall include for the supply of all materials and the installation of the bollard including all plant, equipment and labour. The concrete base is measured elsewhere.

PS.F PROTECTION WORKS

PS.F.3 Materials

PS.F.3.7 Geolok G400 Blocks or similar approved

Add the following new clause:

Due to the numerous proprietary brands of gravity earth retaining systems, each with their particular design parameters, this office has provided the design based on the "Geolok G400" retaining blocks which have the following technical requirements:-

- (a) The blocks shall be cast in concrete with a minimum 28 days cube strength of 20 MPa. All aggregates and the concrete in general, shall conform to the requirements of Part C: Concrete of the Standard Engineering Specification.
- (b) The block shall be of the "closed back" type.
- (c) The proposed blocks shall have a unit mass equivalent to that as set out below:

Block	Equivalent Unit Mass Requirements
G400	675 kg/m ²

- (d) The block shall be able to resist sliding shear of 9.80 kN per linear metre by means of a shear nib cast monolithic with the block.

- (e) The Engineer and any person authorised by him shall at all times have access to the works and to the pre-casting yard.
- (f) The blocks shall be delivered to site in such a manner that they do not become damaged. Any damaged, cracked, or blocks with any other defects shall be rejected by the Engineer's representative.

PS.F.8 Measurement and Payment

Replace the existing clause with the following

- PS.F.8.3** The unit of measurement shall be square metre (m²) and the rate shall include for the procuring and laying of Cynodon Dactylon grass – Bermuda sod which must be watered within 30 minutes of being laid. The application rate of the approved fertilizer is 40g/m². The emergence of weeds and dead patches will not be accepted.

The rate shall cover the supply of grass and fertilizer, preparation, application of the fertilizer, planting and for the maintenance of the planted area (including cutting of grass).

Add the following new clause:

PS.F.8.9 Construction of Dry Stack wall

Taking cognisance of clause PS.F.3.7, the unit of measurement shall be square metre (m²) and the rate shall include for the supply and installation of Geolok G400 blocks or similar approved as indicated on standard drawing D134C.00-UZ2-208-03-T0. The reinforced concrete base, stabilised fill material/soilcrete, weep holes, excavations, bidim, clean coarse sand and backfilling and compaction behind the wall are measured elsewhere.

Add the following new clause:

PS.F.8.10 Soilcrete/Stabilised fill

The unit of measurement shall be cubic metre (m³) and the rate shall include for the supply of G7 Gravel from commercial sources and the stabilising agent (Cement) with the mix ration 10:1 (G7:Cement). The rate is to also include for the mixing of the stabilised material to achieve a minimum UCS (Unconfined Compressive Strength) of 2 MPa and compacted to 93% MOD AASHTO and filling inside the blocks only where directed by the Engineer or as reflected on drawing D134C.00-UZ2-208-03-T0.

Add the following new clause:

PS.F.8.11 Drainage for Retaining Blocks

Drainage will be controlled by 50mm dia. uPVC pipe with drain end securely wrapped in bidim and staggered at max. 1.5m c/c, refer to standard drawing D134C.00-UZ2-204-03-T0.

The unit of measurement shall be number (No.) and the rate shall include for all materials, labour and plant required.

PS.PF PRESSURE PIPELINES: OTHER THAN STEEL

PS.PF.3 Materials

PS.PF.3.4 uPVC Pipes, Fittings and Specials

Replace the existing clause with the following:

All pipes shall be in accordance with SANS 966-1 and shall adhere to the pipe classes and diameters as indicated on the construction drawings. uPVC fittings and specials shall be compliant with the relevant pipe class reflected on the construction drawings, fitted with spigot and socket rubber ring joints and shall comply with the relevant requirements of SABS 966.

Cast Iron T-pieces and Reducers shall be used for uPVC pipes. The working pressure for a special shall not be less than the highest working pressure in any adjacent pipe or fitting. All internal surfaces of CI fittings shall be thoroughly cleaned by grit blasting to a SA 2½ finish in compliance with the requirements of SIS 05 59 00 before applying Fusion bonded epoxy paint to ensure a minimum thickness of 255 micron.

PS.PF.3.5 HDPE Pipes, Fittings and Specials

Replace the existing clause with the following:

All HDPE Pipes shall be black, HDPE PE100 manufactured to SABS ISO 4427 in compliance with the pipe classes and diameters indicated on the drawings and bearing the marking indicating its conformance. All HDPE specials shall be fully rated, or alternatively shall be molded and tested for conformance. Compression T-pieces, Elbows, End Caps and Adaptors shall be used for HDPE pipes.

Only stainless steel bolts and nuts to be used on all underground saddles, flanges, and short collar couplings etc.

PS.PF.3.9.3 Flanges

Flanges shall comply with SANS 1123 and have a minimum working pressure relative to the pipe class specified. Accordingly, depending on the working pressure, holes shall be drilled to Table 600/3, 1000/3, 1600/3, 2500/3 or 4000/3 of SANS 1123.

Any item of pipework or special or valve, of which the flanges are incorrectly drilled, will be rejected. The reaming of bolt-holes to oversized dimensions to enable a particular item to fit will not be allowed.

All flanges shall be provided complete with bolts, nuts, washers and rubber O-rings or fibre insertions, as appropriate. Rubber O-rings dimensioned in accordance with DIN 2514 specification shall be supplied to suit suitably machined flanges. Compressed asbestos fibre insertions shall be not less than 1,5 mm thick and shall comply with BS 2815 Grade B.

PS.PF.3.9.12 Marking

All pipes, specials and valves arriving on site shall be marked clearly with the item number appearing in the Schedule of Quantities. Furthermore the nuts, bolts washers and other ancillary equipment for each individual items shall be kept separate in a bag which shall also bear the respective reference number of that item. The cost of such marking will be held to have been included in the rates tendered for the items.

PS.PF.3.9.13 Materials supplied by the Employer**a) Collection of Materials**

Where indicated by the Engineer, materials shall be supplied by the Employer. The Contractor shall be responsible for collecting the material from the designated storage area and transportation of the materials to site.

b) Collection of Materials

The Contractor shall notify the Engineer and Employer at least one week in advance of his intention to withdraw materials from the Employer's stores.

A list of materials which he wishes to withdraw shall accompany such a notification. The Engineer shall then issue to the Contractor the necessary requisition forms to allow him to withdraw the required materials from the Employer's store. Contractors are to note that materials are to be collected between 08h00 and 14h00 on weekdays. The Contractor must supply all plant and equipment required for safely removing/stacking the materials where required.

c) Ownership of Materials Once Collected by Contractors

All materials supplied by the Employer shall remain the property of the Employer even after being collected by the Contractor, however, the Contractor shall become fully responsible for these materials once he has drawn them from the Employer's stores.

d) Loss of and Damage to Materials

It shall be the responsibility of the Contractor to check, on receiving, the condition of all materials supplied to him by the Employer. All defects shall be recorded on the delivery forms and the Engineer shall be notified in writing. The Employer will then:

- (a) Replace the defective materials, or
- (b) Repair the defective materials, or
- (c) Instruct the Contractor to repair the materials at the Employer's cost.

However, should the Engineer not be notified in writing of any defective or damaged materials, it will be assumed that all materials were handed over to the Contractor in a good condition. Any damage reported thereafter will be to the Contractor's account.

The Contractor shall be responsible for any loss of materials supplied by the Employer.

e) Return of Excess Materials

On completion of the works, the Contractor shall be responsible for the return of all surplus materials to the Employer's store. No additional payment shall be made in this regard and Contractor's are to include for this item in their rates.

Contractors are to note that materials may only be returned to the stores between 08h00 and 14h00 on weekdays and must notify the Engineer of their intention to do so.

This item shall include for the provision of craneage at the Employer's store for the off-loading of all material.

PS.PF.3.9.14 Protection During Handling, Storage, Etc.

The Contractor shall satisfy the Engineer that the manufacturer's recommendations for good practice for transporting, handling, staking, storing and installing pipes, pipe fittings, sealing rubbers etc. are being diligently followed. The Engineer's Representative shall be given the opportunity to inspect all materials immediately prior to installation and shall have the right to reject any materials which, in his opinion, have suffered damage which may impair the long term durability or strength of said items.

Pipes and specials shall be protected against damage during all stages of manufacture, delivery, storage and handling. The ends of all steel pipes and specials shall be protected against denting. Steel pipes shall be transported and stacked in such a manner that the pipe barrel is not deformed by more than 2% of its diameter. Dents which cause a protrusion of more than 1mm on the inside of the steel special, may result in the special being rejected.

PS.PF.5 Construction**PS.PF.5.9 Cutting of pipe ends**

If it is necessary to cut pipes, the cut ends shall be turned using a field lathe. Filling of the coupling surfaces of pipes will not be permitted.

PS.PF.5.10 Connection on existing main

Where shown on the drawing or ordered, the Contractor shall cut into the existing watermain and connect in the new main.

Before commencing the excavation of pipe trenches in the vicinity of a proposed connection, the Contractor shall excavate for, expose, survey and record the position and level of the connection point on existing watermain.

The Contractor shall be responsible, through the Engineer, for liaison with the Municipality (authority concerned) to arrange for turning off water in order to carry out the connection.

PS.PF.7 Testing**PS.PF.7.2 Hydraulic Pipe Test**

Maintain the first paragraph and replace the remainder of the clause with the following:

The maximum working pressure required to derive the test pressure field testing in terms of Subclause 7.3.1.2 shall be the maximum allowable working pressure applicable to the class of pipe specified.

In the case of uPVC pipes the test pressure for field testing shall be 1,5 times the maximum allowable working pressure applicable to the class of pipe specified.

a) Valves

Unless otherwise specified in the Project Specification or in the Schedule of Quantities, the maximum working pressure shall be 1.2Mpa.

All valves shall be subjected to PART A test at the makers works and where required by the project specification and Schedule of Quantities, valves shall be subjected to PART B test all as specified below.

PART A

All valve bodies shall be hydraulically tested closed ended to twice the working pressure, and there shall be no leaks or sweating. The valves shall also be tested in the closed position with zero pressure on the downstream side and twice the maximum working pressure on the upstream side. The leakage if any, shall be measured and reported.

PART B

The valves shall be erected in a suitable testing loop at a pump testing bay so that the actuation systems can be demonstrated to ensure that adequate torque is exerted to close and open the valve through the position or positions of maximum dynamic and hydrostatic torque under the extreme conditions of differential head that exist in service. The actuators shall be demonstrated to achieve an opening and closing torque at least 15% in excess of that to be encountered on site.

Facilities shall be made available for the Engineer to witness these tests and 14 days notice in writing shall be given to the Engineer to the date and place at which the tests shall be done.

Test certificates shall be supplied to the engineer for each valve.

PS.PF.8 Measurement and Payment

PS.PF.8.2.10 Pipe Fixing Bracket – Pipe Bridge

As indicated on the detail drawings, a pipe bridge shall be constructed to cater for undulating terrain. The exposed Ductile Iron pipeline shall be fixed to the reinforced concrete cradle/culvert on top of the columns using a Stainless Steel purpose made fixing bracket 120mm wide x 6mm thick with a 6mm thick Neoprene rubber strap wrapped around the pipe. The brackets shall be fixed to the cradle using 20mm HD Bolts in 40mm sleeves and where the pipe is fixed to the culvert, 12mm stainless steel bolts, 100mm in length will be dowelled into 14mm holes which are filled with Sikadur 32. Denso Mastic Compound shall be applied over the brackets when installation is complete.

The unit of measurement shall be number (No.) and the rate shall include for all materials reflected on drawing D134C.00-UZ2-133-01-T0 for the fabrication of one Pipe Fixing Bracket, including the stainless-steel brackets, all bolts, sleeves, washers, nuts, Neoprene straps, Denso mastic compound, Sikadur 32 as well as all labour, plant and equipment required to complete the installation.

PS.PF.8.2.11 Ancillary Infrastructure

A provisional sum has been included in the Bill of Quantities to cater for ancillary infrastructure that may be required during the construction of water reticulation networks. These items are site specific and can only be determined by the Engineer to suit a particular

area during construction. It may include the supply and installation of meters, supply and installation of valves, fittings, pipelines etc. During construction, the Engineer will identify items to be supplied and installed/constructed into the works and the Contractor will be required to provide rates for the tasks associated. The Engineer and Employer reserve the right to reject rates that are deemed by either/both parties to be relative to market norms. The Contractor will then be required to re-price such items until the Engineer and Employer are satisfied.

PS.PF.8.2.12 Connecting Into Existing Pipelines

Add the following new clause:

Where indicated on the construction drawings or directed by the Engineer, the contractor shall connect to existing water pipelines. The contractor is to submit a methodology to Ethekwini Municipality and the Engineer detailing the works to be undertaken when connecting to an existing pipeline. The works may only commence upon the approval of this methodology.

The unit of measurement shall be Provisional Sum (Prov Sum) and the rate shall include for constructing a new standard chamber incorporating a maximum pipeline diameter of 90mm, all excavations, preparation and making good upon completion. The rate shall also include for all facilitation, liaison etc. to ensure that the connection is completed and approved by the Employer and Engineer. The rates to execute the works shall be requested by the Engineer and the Contractor shall provide a quotation accordingly. The Engineer reserves the right to reject any rates that are not market related and the Contractor will then be required to provide a revised quotation to the satisfaction of the Engineer.

PS.PG NON PRESSURE PIPELINES AND PRECAST CONCRETE CULVERTS

PS.PG.8 Measurement and Payment

PS.PG.8.4 Future Connections

Replace the existing clause with the following:

House connections shall be constructed as per the detail on drawing D134C.00-UZ2-104-01-T0. The unit of measurement shall be number (No.) and the rate shall include for supply and installation of all materials (junctions, bends, 3m length of 110mmø pipeline, a rodding eye, end caps, anchor blocks, couplings, precast concrete cover slab etc), labour, plant and equipment. Excavation and bedding is measured elsewhere.

PS.PG.8.14 Connecting Into Existing Pipelines

Add the following new clause:

Where indicated on the construction drawings or directed by the Engineer, the contractor shall connect to existing sewer pipelines. The contractor is to submit a methodology to Ethekwini Municipality and the Engineer detailing the works to be undertaken when connecting to an existing pipeline. The works may only commence upon the approval of this methodology.

The unit of measurement shall be number (No.) and the rate shall include for constructing a new standard manhole to a maximum depth of 2m incorporating a maximum pipeline

diameter of 250mm, all excavation and making good upon completion.

PS.PH MANHOLES AND APPURTENANT DRAINAGE WORKS

PS.PH.3 Materials

PS.PH.3.1 Bricks

Replace the existing clause with the following:

Burnt clay masonry units for foul-water manholes, stormwater inlets, headwalls and inspection chambers shall be Non-Facing Extra (NFX) with a nominal compressive strength of 14 MPa to SABS 227:1986.

PS.PH.8 Measurement and Payment

PS.PH.8.2 Standard Foul-water or Stormwater Sewer Manholes

Maintain the standard specification and only replace item (d) with the following:

Excavation for manholes shall be measured under the relevant trench excavation items in the applicable section within the Bill of Quantities utilizing payment clause DB 8.5 for the full volume of excavation required for the construction of the manhole. This includes any additional excavation/trench widening for the foundation base and manhole rings etc. All extra over payments for hard or rock material encountered in excavations for manholes shall be paid under the relevant items in part DB relying on the provisions of payment clause DB 8.5. No additional payment will be made for manhole excavation other than that which is stipulated in this clause.

PS.PH.8.3 Standard Stormwater Inlets

Replace the existing clause with the following:

The unit of measurement shall be number (No.) for the type of inlet and depth stated in the schedule of quantities.

The tendered rate for standard stormwater inlets shall include for the supply of all labour and materials to construct the inlet complete in accordance with the standard drawings and specification including forming of the invert, construction of concrete apron with length dependent on the number of splays including serrations and setting inlet cover and slab to level, the cover and slab itself etc. Excavation for manholes shall be measured under the relevant trench excavation items in the applicable section within the Bill of Quantities utilizing payment clause DB 8.5 for the full volume of excavation required for the construction of the manhole. This includes any additional excavation/trench widening for the foundation base and manhole rings etc. All extra over payments for hard or rock material encountered in excavations for manholes shall be paid under the relevant items in part DB relying on the provisions of payment clause DB 8.5.

PS.PH.8.8 Breaking Into Existing Manholes

Replace the existing clause with the following:

Where directed by the Engineer, the contractor shall break into an existing sewer/stormwater manhole in order to connect a new sewer/stormwater pipeline.

The unit of measurement shall be number (No.) and the rate shall include for breaking into

the manhole for a maximum pipe diameter of 600mm, connecting the new pipeline, reconstruction of the benching and making good upon completion.

PS.PH.8.9 Testing of Manholes

Replace the existing clause with the following:

Where directed by the Engineer, sewer manholes shall be tested for watertightness. Tests shall be carried out by filling the manhole with water to the underside of the frame of the manhole chamber. After an initial period of 24 hours to allow for absorption, the drop in water level will be measured over a 24 hour period. The drop in water level during the test period shall not exceed 50 mm per metre depth.

The unit of measurement shall be number (No.) and the rate shall include for all plugs, stoppers and other equipment required as well as labour to seal the manhole and shall also include for supply, transport and disposal of the water used for the tests. Any leaking or defective manholes shall be made good by the Contractor at his own expense.

Add the following new clause:

PS.PH.8.10 Headwalls

Drawing number 38576 reflects details of outlet headwalls. The unit of measurement for these headwalls shall be number (No.) and the rate shall include for all labour, plant and materials required for the construction of the headwall inclusive of excavation, construction of the base, splitter blocks, walls, rebar, finishing etc as indicated on the drawing. This specification is to be read in conjunction with PS.PH.3.1.

PS.PH.8.11 Subsoil Outlet Headwalls

The subsoil outlet headwall shall be constructed as per the Detail N on standard drawing D134C.00-UZ2-104-01-T0. The unit of measurement for the headwalls shall be number (No.) and the rate shall include for all labour, plant, equipment and materials required for the construction of the headwall inclusive of excavation, construction of the base, brick walls, reinforcement, grouted stone pitching, finishing etc as indicated on the drawing.

C3.4: PARTICULAR SPECIFICATIONS

In addition to the Standardized and Project Specifications the following Particular Specifications / Policies shall apply to this contract and are available on web address:

<ftp://ftp.durban.gov.za/cesu/StdContractDocs/>:

C3.4.1 Part AH - OHSA 1993 Safety Specification
(26 Pages)

C3.4.2 Standard Environmental Management Plan for Civil Engineering Construction Works
(24 Pages)

C3.5: CONTRACT AND STANDARD DRAWINGS**C3.5.1 CONTRACT DRAWINGS / DETAILS**

D134C.00-UZ2-100-01-T0 – General layout HX17
 D134C.00-UZ2-100-02-T0 – General layout HX17
 D134C.00-UZ2-104-01-T0 – Roads and Stormwater Standard Detail
 D134C.00-UZ2-133-01-T0 – Roads and Stormwater Standard Detail
 D134C.00-UZ2-208-01-T0 – Drystack Retaining Wall Details
 D134C.00-UZ2-202-01-T0 – Concrete Retaining Wall Section and Design Table
 Plan No 27 – Precast Concrete Valve Marker
 Plan No. 39 – Thrust Block Details for MPVC Pipes
 Plan No. 51B – Standard Hydrant with MPVC Duckfoot bend of 100mm Ø TEE
 Plan No. 117 – Standard Assembly Valve

C3.5.2 STANDARD DRAWINGS

The Standard Drawings to which these Standard Engineering Specifications refer are listed below.

Dwg No	Description	Date of Issue	
38570	Ring Manholes	February	1990
38571	Brick Manhole Details	February	1990
38572	Stormwater Inlet Details	February	1990
38573	Stormwater Inlet Special Details	February	1990
38574	Sewer Manholes: Ramp, Backdrop and Channelling Details	February	1990
38575	Sub-Soil Drain, Pipe Bedding and Pipe Protection Details	February	1990
38576	Headwall Details	February	1990
38577	Kerbing Details	February	1990
38578	Concrete Median Barriers	February	1990
38579	Vehicular and Pedestrian Scoops	February	1990
38580	Concrete Bollard and Steel Guard Rail	February	1990
38581	Retaining Wall, PC Steps, Staircase, Cable Ducts and Headwalls	February	1990

Copies of the relevant standard drawings reflected above are obtainable from Ethekwini Municipality, 166 KE Masinga Road – 5TH Floor Records Section. Tenderers are to obtain their own copies.

C3.6: ANNEXURES

- C3.6.1 TYPICAL NOTICE BOARD FOR HUMAN SETTLEMENTS UNIT**
- C3.6.2 SITE SPECIFIC HEALTH AND SAFETY SPECIFICATIONS**

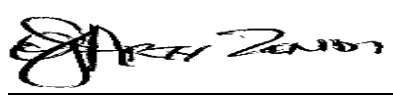
C3.6.1 TYPICAL NOTICE BOARD FOR HUMAN SETTLEMENTS UNIT

C3.6.2 SITE SPECIFIC HEALTH AND SAFETY SPECIFICATIONS

ETHEKWINI MUNICIPALITY
Occupational Health & Safety Unit



**Site Specific Health and Safety Specification in terms of 2014
Construction Regulations 5.1(b)**

Document Title	Site Specific Health and Safety Specification
Client	EThekwini Municipality - Human Settlements Unit
Project Name	Construction of civil Infrastructure for Umlazi zone 2
Contract Number	1H-48296
Internal reference no.	SSHSS46/09/2021
Compiled by	Name and surname: Siya Nkosi Signature:  Date: 17/09/2021
Reviewed by (Manager: Safety& Risk)	Name and surname: Arty Zondi Signature:  Date: 17/09/2021

PROJECT LOCALITY

Nil

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36. Site establishment
37. Corona virus

- 38. Demolition
- 39. Public safety

1. DEFINITIONS

For the purpose of this Construction Health and Safety Specification, all definitions in the Occupational Health and Safety Act and Regulations, the abbreviations and the definitions given hereunder shall apply; where definitions may overlap, the most onerous requirement shall apply:

Acronym or Definition	Meaning
Agent	Refer to the Agent appointed by the Client to act on its behalf, and who is appointed in writing
CHSS	Refers to this document as the Construction Health and Safety Specification
Client	Refers to eThekwin Municipality
COIDA	Means Compensation for Occupational Injuries and Diseases Act 130 of 1993
Construction Site	Means the premises and grounds where construction work is being performed
Principal Contractor	Means an employer appointed by the Client to perform construction works
CR	Refers to the Construction Regulations of 2014
DSTI	Refer to Daily Safety Task Instruction
H&S	Refers to Health and Safety
Medical Certificate of Fitness	Means a valid medical certificate of fitness issued by an occupational medicine practitioner, such medical testing shall be relevant to the risks of the construction work on the construction site and shall conform to the Occupational Health and Safety Act and Regulations and to the requirement of this Health and Safety Specification
Method Statement	Refer to a document detailing the key activities to be performed in order to reduce as reasonably as practicable the hazards identified in the Risk Assessment
OHSA	Refer to the Occupational Health and Safety Act
Regulations	Refer to the Regulations stipulated in the OHSA
S	Refer to a section in the OHSA
SACPCMP	Means the South African Council for the Project and Construction Management Professions

Sub-Contractor	Means an employer appointed by the Principal Contractor
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2. PROJECT DESCRIPTION AND SITE ACCESS

The broad extent of the works for this contract will include, but is not limited to, the following:

Type of Works and Description of Works

- **Site Clearance** - General clearance including the removal of vegetation, concrete slabs, kerbs, formal/informal ablution facilities etc.
- **Footpaths** - Approximate total length = 2500m. 100mm Thick Concrete Footpaths (25MPa/19mm), reinforced with Mesh Ref. 193 will be constructed on a 150mm in situ layer, ripped and recompact to 93% of MDD.
- **Sewer** - Approximate total length = 9300m. Sewer Manholes and 160mm dia./110mm dia. (Heavy Duty Class 34) pipelines as well as standard house connections.
- **Storm Drainage** - Approximate total length of pipelines = 1500m. Manholes, Inlets, Concrete and HDPE Pipelines, 'V' Drains, Headwalls etc. shall form part of the drainage works.
- **Roadworks** - Approximate total length = 1350m. Reinforced Concrete and Asphalt surfaced roads will be constructed as indicated on the contract drawings.
- **Protection Works** - Approximate area of retaining structures = 3500m² The following types of retaining structures may need to be constructed:
 - Dry Stack Retaining Blocks – Geolok G400 or similar approved
 - Gabion Retaining Walls
 - Reno Mattresses
 - Reinforced Concrete Walls
- **Water Infrastructure** - Approximate total length of pipelines = 2300m Water pipelines (HDPE & mPVC) including associated valves and fittings will be constructed as part of this contract.
- **Ablution Works** - Toilet and Shower facilities as well as associated infrastructure will be provided where directed

3. LIMITATIONS OF LIABILITY

The Principal Contractor shall enter into a Mandatory Agreement with the Client, as defined in Section 37(2) of the Occupational Health and Safety ACT.

The Principal Contractor shall ensure that each contractor appointed by the Principal Contractor and each sub-contractor appointed by a contractor also into a Mandatory Agreement with the Principal Contractor, as defined in Section 37(2) of the Occupational Health and Safety ACT. These agreements shall be included in the Principal Contractor's H&S File on site and be valid for the duration of the contractors' work on the construction site.

4. PURPOSE OF THE CONSTRUCTION H&S SPECIFICATION

This document defines the minimum management requirement that is to be implemented by the Principal Contractor/Contractor for the management of Health and Safety on any eThekweni Municipality project.

The aim of this document is to present the health and safety aspects that need to be controlled and managed on the project.

This Health and Safety specification identifies and encompasses the working behaviours and safe work practices that are expected of all employees, Vendors and Contractors, Sub-Contractors and Visitors, engaged on construction site.

Providing a guideline to comply with best Health & Safety practices and the Occupational Health and Safety Act 85/1993 as amended, including reference to applicable legislative requirement.

5. PROJECT HEALTH AND SAFETY COST

The Client must ensure that potential Principal Contractor submitting tenders have made adequate provision for the cost of health and safety measures.

The Principal Contractor shall allow in their cost provision for complying with the requirements of this Construction Health and Safety Specification; resources for the following Health and Safety controls shall be in place.

	H&S cost item	Description
1.	Full time construction health and safety officer	A fulltime Construction health and safety officer is required to ensure that the health and safety plan is implemented on site. The required construction health and safety officer must be registered with SACPCMP as a CHSO
2.	Safety file	Full completed with all supporting documents
3.	Training and competencies	Risk assessor, Fall protection Planner, Incident Investigator and Fire fighter, First aider, Excavation safety
4	Medical certificate of fitness	Medical examination of all employees and certification of fitness by an Occupational Medicine Practitioner Pre- employment and annual
5	PPE	Personal Protective Equipment to be provided as per risk exposure, including but not limited to: respiratory protection, hearing protection, hand protection, eye and face protection and fall protection

6	Public safety	Barricading, shoring, signage and notices
7	Employee facilities	Refer to the Facilities Regulations (drinking water, change facility, personal lockers, and wash facilities, eating facilities, ablution toilets)
8	Signage	All construction safety signage required for the project
9	COVID19	All requirement for prevention of COVID19 (Training and awareness, PPE, testing and screening, sanitizers ect.)
10	Environmental management	Protection of ground/ soil, water, air ect and dust mitigation
11	Other	

6. SCOPE OF WORK

The works/ risk assessments must include but not limited to:

Demolition work
Relocation of beneficiaries
Installation of guardrails
Site clearing
Site establishment
Concrete work
Excavation/ Earthwork
Construction vehicle and mobile plant
Construction of roads
Construction of appurtenant
Compaction
Construction of storm-water drainage system
Construction of sewer-line system
Soil poisoning
Working in a fall risk positions
Corona virus
Public safety

7. COMPENSATION FOR OCCUPATIONAL INJURIES AND DISEASES ACT

The Principal Contractor, each contractor and each sub-contractor shall submit proof of Good Standing with COIDA Commissioner or a Mutual Association licensed in terms of Section 30 of COIDA, prior to starting any work on site. A copy of the Letter of Good Standing with COIDA Commissioner must be included in the H&S Plan of each contractor working on the site and must remain updated for the duration of the construction work.

8. APPLICATION FOR CONSTRUCTION WORK PERMIT

The Principal Contractor shall assist the Client in compiling the evidence required by the Department of Labour for the issuing of the Construction Work Permit. The Principal Contractor shall ensure that the H&S Plan presented for approvals includes:

- Evidence that the Principal Contractor made adequate provision for the cost of H&S measures
- Evidence that the Principal Contractor has the necessary competencies and resources to carry out the construction work safely.
- A copy of the Letter of appointment of the Construction Manager in terms of CR 8(1) + proof of his qualification, competence and registration where applicable.
- Proof of the registration of the Principal Contractors safety officer with the SACPCMP.

The Principal Contractor shall display the work permit number at the main site entrance. This display must be conspicuous to the satisfaction of the Department of Labor. The permit must be noticeable. The construction works can only commence once the construction work permit is issued by the Department of Labor.

9. MANAGEMENT AND SUPERVISION OF CONSTRUCTION WORK

During the submission of your health and safety file for approval, please ensure that at least the following appointments are submitted with the file

- Construction manager CR8(1)
- Construction work supervisor CR8(7)
- Construction health and safety officer CR8(5)
- Risk assessor CR9(1)
- Incident investigator GAR9(2)
- Fall Protection Planner CR10(1)
- Excavation supervisor
- COVID19 Manager
- Demolition supervisor

9.1 Construction Manager

The Principal Contractor shall appoint a full time competent person as the construction manager with the duty of managing all construction on the site including the duty of ensuring occupational health and safety compliance.

The Construction Manager must demonstrate competency in relation to work being performed and the ability to manage construction work which may include making all statutory appointments in terms of health and safety.

9.2 Construction health and safety officer

The Principal Contractor shall appoint a fulltime competent Construction Health and Safety Officer for the construction work, with at least 2 years in the construction industry as a construction health and safety officer. The appointed Construction health and safety officer must be registered with SACPCMP as a Construction health and safety officer.

9.3 Construction Supervisor

A Construction Manager must in writing appoint construction supervisors responsible for construction activities and ensuring occupational health and safety compliance on the construction site. A contractor must, upon having considered the size of the project, in writing appoint one or more competent employees for different sections thereof to assist the construction supervisor contemplated in sub regulation (7), and every such employee has, to the extent clearly defined by the contractor in the letter of appointment, the same duties as the construction supervisor:

Provided that the designation of any such employee does not relieve the construction supervisor of any personal accountability for failing in his or her supervisory duties in terms of this regulation.

10. PRINCIPAL CONTRACTOR'S HEALTH AND SAFETY PLAN

The Principal Contractor shall submit a suitable, sufficiently documented and coherent specific health and safety plan based on the Client documented Health and Safety Specification. The health and safety plan shall include but not limited to the following

- Objectives
- Scope of work
- Site establishment
- Management of construction and supervision
- Monitoring and review plan
- Sub-contractor management
- Risk Assessment
- Written Safe Working Procedures
- Incident Management
- First Aid
- Fall Protection Plan
- Emergency procedures

- Fire Prevention & Protection
- PPE Provision
- Health & Safety Signage
- Excavations and bulk earthwork
- Construction Vehicles and Mobile Plants
- Hand and Electrical Tool Management
- Construction Employees Facilities
- Health & Safety Policies
- Health and Safety Training & Competencies
- Housekeeping
- Hazardous Chemicals
- Inductions
- Medicals
- Stacking and Storage
- Internal and external Audit
- Inspection Registers
- Toolbox Talks
- Concrete work
- Corona virus
- Demolition

11. HAZARD IDENTIFICATION AND RISK ASSESSMENT

The Principal Contractor shall before commencement of any construction and during such construction works have risk assessments performed by appointed competent person in writing which forms part of the health and safety plan to be applied.

The provisions of Regulation 9 of the Construction Regulations shall be followed in every detail.

12. HEALTH AND SAFETY FILE

The Client must discuss and negotiate with a Principal Contractor the content of the Health and Safety Plan and thereafter finally approve the Health and Safety plan for implementation. The recommended Health and Safety file shall include the following:

- *SHE policy*
- *PPE policy*
- *COVID19 Policy*
- *Client health & safety specification and Baseline*

- *Principal contractor health & safety plan*
- *COVID19 Health Risk Management Plan*
- *Letter of good standing*
- *Section 37.2 Mandatory Agreement*
- *Contractor appointment letter in terms of CR 5.1(k)*
- *Legal appointments and competencies*
- *Risk Assessments as per scope of work*
- *COVID19 Risk assessment*
- *Safe working procedures as per risk assessment*
- *Incident/Accident management procedures*
- *LOA from SCM*
- *Organogram as per appointments*
- *Copy of OHS Act, Construction Regulations 2014 ect.*
- *Environmental management procedures*
- *Health and safety induction programme*
- *Emergency procedures*
- *Medical certificate of fitness*
- *Tool box talks programme/ Plan*
- *Fall protection plan*
- *Excavation method statement done by the Construction manager or Excavation supervisor **NOT** Safety Officer*
- *Demolition method statement done by Construction manager or Demolition supervisor **NOT** Safety Officer*

13. HEALTH AND SAFETY REPRESENTATIVES AND COMMITTEE

Health and Safety Representatives

- The Principal Contractor shall ensure that Health and Safety Representatives are appointed in writing and exercise their functions as defined in OHSA.
- The Principal Contractor shall elect and appoint a health and safety representative regardless of the number of employees on the site.
- The H&S representative shall at all times be on site and report to the Health and Safety Officer and Construction Manager.

Health and Safety Committee

- The Principal Contractor shall ensure that the H&S committee meets on a monthly basis
- The Principal Contractor's management and each contractor shall be represented at the H&S committee meeting; contractors with more than 20 employees shall have an H&S representative at each committee meeting and each contractor shall have a management member attending each H&S committee meeting.

14. CLOSE- OUT CONSOLIDATED HEALTH AND SAFETY FILE

The Principal Contractor shall compile a consolidated H&S file and hand over to EThekwini municipality, Human settlements Unit. OHS Unit will conduct a project close out using the appropriate checklist before the completion of the project. The closeout file forms part of the project completion requirements for the retention payment.

15. HEALTH AND SAFETY TRAINING

The Principal Contractor shall ensure that employees are trained on health and safety measures this shall include but not limited to:

- Written safe working procedures
- Risk assessments
- Health and safety plan
- Fall protection plan
- Emergency management plan
- Environmental management plan
- COVID19 awareness
- Induction
- Toolbox Talks
- MSDS
- Demolition work

16. INCIDENTS MANAGEMENT & FIRST AID

All incidents and accidents as per Section of the Act must be reported, recorded and investigated as per General Administration Regulation 8 & 9

Where a fatality or permanent disabling injury or incident occurs on the Construction site, the Client must ensure that the Principal Contractor provides the Provincial Director with a report contemplated in Section 24 of the Act and the report includes the measures that the Principal Contractor intends to implement to ensure a safe construction site.

17. HEALTH AND SAFETY AUDITS

The Client must ensure that periodic health and safety audits are conducted at intervals mutually agreed upon between the Principal Contractor and the Client at least every 30 days, the copy of the health and safety audit report must be provided to the Principal Contractor within seven days after the audit.

18. FIRE PRECAUTIONS ON CONSTRUCTION SITE

The Principal Contractor shall provide suitable fire extinguishers which shall be serviced regularly in accordance with the manufactures recommendations.

Safety signage shall be prominently displayed in all areas where fire extinguishers are located. The Principal Contractor shall arrange for training of the relevant personnel, in the use of fire extinguishers.

The provisions of Regulation 29 of the Construction Regulations as well as Regulation 9 of Environmental Regulation for Workplaces shall be followed in every detail.

19. PERSONAL PROTECTIVE EQUIPMENT AND CLOTHING.

The Principal Contractor shall ensure that every employee is issued with, and wears SANS-approved P.P.E. as per the conducted risk assessment. Failure to use protective equipment as per the risk assessment shall require disciplinary intervention and this process shall be documented in the induction. No employer shall in respect of anything which he is in terms of this Act required to provide or to do in the interest of health or safety of an employee make any deductions from any employee's remuneration or require or permit any employee to make any payment to him or to any other person.

The provisions of Regulation 2 of the General Safety Regulations shall be followed in every detail.

20. OCCUPATIONAL HEALTH AND SAFETY SIGNAGE

The Principal Contractor shall erect and maintain quality safety signage

The signage shall include but is not limited to:

- The construction work permit number displayed at the entrance
- Access restrictions
- A sign indicating that all visitors must report to the site office and must be accompanied by the Principal Contractor when accessing the site
- The name and telephone number of the responsible person(s)
- Emergency telephone number(s)
- PPE to be worn at the particular site
- When falling objects may occur, relevant barricading and warning signs must be erected
- Excavations, heights structures, temporary structures and all risk areas must be indicated as per the specific methods defined in the H&S Plan.

21. DUTIES OF PRINCIPAL CONTRACTORS AND CONTRACTORS

Contractors and sub-contractors must be given a copy of the H&S specification and any additional specification issued by the Client and shall comply with these specifications integrally. All employers working on the site shall conform to the standard in the CHSS. All the duties of the Principal Contractor in this CHSS equally apply, in full, to contractors of such Principal Contractor and to sub-contractors of such contractors. The Principal Contractor shall ensure that the comprehensive and updated list of all the contractors and sub-contractors on site includes:

- A reference to the agreements between the parties, including all contractors Section 37(2) agreements with the Principal Contractor
- The type of work being done
- The date of the approval of the H&S Plan
- The date of expiry of the COIDA certificate of good standing
- The date of the last monthly audit

The provisions of Regulation 7 of the Construction Regulations shall be followed in every detail.

22. FALL PROTECTION AND WORKING ON ELEVATED POSITION

The Principal Contractor shall ensure that the fall protection plan include a risk assessment for all work carried out from the fall risk position and the safe work procedures. All employees working from fall risk position are subject to medical examination. The Training Programme must be in place for employees working from a fall risk position. The procedures addressing the inspection, testing and maintenance of all fall risk protection equipment. The rescue plan detailing procedure, personnel and suitable equipment to be used to rescue a person. The Principal Contractor must that a competent person is designated to be responsible for the preparation of the fall protection plan.

The provisions of Regulation 10 of the Construction Regulations shall be followed in every detail.

23. EXCAVATION AND BULK EARTHWORK

The Principal Contractor must ensure that all excavation work is carried out under the supervision of a competent person who has been appointed in writing for that purpose. The Principal Contractor shall take cognisance of the geotechnical study pertaining to the conditions of the construction site and must plan all excavation work in accordance with the recommendations of the professional engineer. The Principal Contractor must ensure that every excavation, including all bracing and shoring, is inspected daily, prior to the commencement of each shift and that no person enters the excavation or works in a risk zone until the excavation is assessed and declared safe. All excavations must be left open for the minimum of time required and those that are left open on the site must be protected by a barrier or a fence of at least one meter in height as close to the excavation as is practicable. The protective barrier or fence must adequately prevent persons from falling into the excavation and barrier taping is not sufficient for this purpose. Excavation shoring and bracing, if required shall be designed by a designer appointed in writing who shall inspect and approve the installed shoring and bracing. Where persons work, inspect or test excavations, warning signs must be in place next to an excavation

The provisions of Regulation 13 of the Construction Regulations shall be followed in every detail.

24. NIGHT; WEEK –END WORK

No night or weekend work shall be performed unless authorized by the Principal Agent or Lead Engineers. Where week end work is planned the Principal Contractor shall ensure that its construction supervisor is on site, this applies even if only contractors or sub-contractors are working on the site. Where week end work is planned each contractor or sub-contractor shall ensure that its construction supervisor is on site, this applies even if the Principal Contractor's manager or supervisor is on the site.

25. CONSTRUCTION EMPLOYEES FACILITIES

The Principal Contractor shall provide at or within reasonable access of every construction site, the following clean, hygienic and maintained facilities:

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

The provisions of Regulation 2, 3, 4, 6, 7, 9 of the Facilities Regulations shall be followed in every detail.

26. STORAGE AND USE OF FLAMMABLE LIQUIDS

No flammable substances must be stored on site unless these are stored in a flammable store or cabinet approved by the Municipal Chief Fire Officer, no other materials shall be stored in the flammable store or cabinet. Where required the H&S Plan shall include a method statement detailing the safe use, storage, decanting and spill controls for all flammable liquids used and stored on site.

The provisions of Regulation 25 of the Construction Regulations shall be followed in every detail.

27. HAZARDOUS CHEMICAL SUBSTANCE

With respect to hazardous chemical substances used, the contractor shall ensure that:

- All MSDS are included in the H&S File
- A HCS risk assessment is included in the H&S Plan
- The safe use, storage, emergency procedures and safe disposal of hazardous substances are addressed in a method statement(s) included in the H&S Plan.
- Proof of competency and signed letters of appointment of the person responsible for chemical handling is included in the H&S File.

Any hazardous chemical substance intended to be applied on site during the project (i.e. after approval of the H&S Plan) shall be subject to an issue-based risk assessment and method statement which must be presented to the Client Agent prior to the substance being introduced on site.

The provisions of Regulation 3, 5, 7, 8, 9, 9A, 10, 11, 14, 15 of the Hazardous Chemical Substances Regulations shall be followed in every detail.

28. HOUSEKEEPING AND GENERAL SAFE GUARDING ON CONSTRUCTION SITE

The Principal Contractor shall appoint a person responsible for general housekeeping and stacking and storage of materials and equipment on the entire site.

The provisions of Regulation 27 of the Construction Regulations shall be followed in every detail.

29. CONSTRUCTION MEDICALS

A Principal Contractor must ensure that all his or her employees have a valid medical certificate of fitness specific to the construction work to be performed and issued by an Occupational Health Practitioner in the form of Annexure 3.

30. STACKING AND STORAGE ON CONSTRUCTION SITE

A Principal Contractor must, in addition to compliance with the provisions for the stacking of articles in the General Safety Regulations, 2003, ensure that—

A competent person is appointed in writing with the duty of supervising all stacking and storage on a construction site;

Adequate storage areas are provided;

There are demarcated storage areas; and storage areas are kept neat and under control.

31. INDUCTION AND TOOLBOX PROGRAMME

No contractor may allow or permit any employee or person to enter any site, unless that employee or person has undergone health and safety induction training pertaining to the hazards prevalent on the site at the time of entry.

A contractor must ensure that all visitors to a construction site undergo health and safety induction pertaining to the hazards prevalent on the site and must ensure that such visitors have the necessary personal protective equipment.

A contractor must at all times keep on his or her construction site records of the health and safety induction training contemplated in sub-regulation (6) and such records must be made available on request to an inspector, the client, the client's agent or the principal contractor. The Principal Contractor must ensure that the toolbox talks are conducted on weekly basis and the training records kept on the safety file

32. CONSTRUCTION VEHICLES AND MOBILE PLANTS

For any use of construction vehicle and mobile plant in the construction site, contractor must comply with all the provisions of Construction Regulation 23.

33. CONCRETE WORKS

The contractor must ensure that necessary measures are taken to minimize or mitigate any risk associated with the use of concrete on site. Measures to be taken must be written in the contractor's health and safety plan or environmental management procedures.

34. ORGANOGRAM

Contractor shall submit an organogram outlining the site safety, health and environmental management structure as per appointment. The organogram must reflect the project and the company name and must have legal references

35. ENVIRONMENTAL MANAGEMENT

To ensure compliance with all the applicable environmental management regulations and applicable specifications of this project, please ensure that the minimum below topics are covered:

- Dumpsite,
- Water provision,
- Ablution,
- Waste management,
- Concrete works,
- Refuelling and spillage management,
- Hazardous chemicals storage and disposal,
- Environmental awareness training,
- No Go Areas,
- Site demarcation ect
- Demolition work

36. SITE ESTABLISHMENT

The contractor is required to do the site establishment as per agreement with the client. The contractor must indicate on his health and safety plan as to how he is going to deal with the all health and safety site establishment requirements

37. CORONA VIRUS

Corona viruses are a large family of viruses that are found both in humans and animals. Some of these viruses are known to cause illnesses ranging from common cold to severe respiratory diseases. Corona virus (COVID-19) was identified in December 2019 in China.

COVID-19 infections have spread to other countries in the world. Exposure to Covid-19 may cause flue like symptoms such as coughing, sneezing, headaches, fever, sore throat and at times affect the lungs and airways of employees. Symptoms can be mild, moderate, severe or fatal.

Coronavirus Disease 2019 (COVID-19) is a respiratory disease caused by the SARS-CoV-2 virus.

To reduce the impact of COVID-19 outbreak conditions on businesses, workers, customers, and

the public, it is important for all employers to plan now for COVID-19. For employers who have already planned for influenza outbreaks involving many staff members, planning for COVID-19 may involve updating plans to address the specific sources of exposure, routes of transmission, and other unique characteristics of SARS-CoV-2 (i.e. compared to influenza virus outbreaks).

Introduction

The legislation governing workplaces in relation to COVID-19 is the Occupational Health and Safety Act, Act 85 of 1993, as amended, read with the Hazardous Biological Agents Regulations. Section 8 (1) of the Occupational Health and Safety (OHS) Act, Act 85 of 1993, as amended, requires the employer to provide and maintain as far as is reasonably practicable a working environment that is safe and without risks to the health of employees. Specifically, section 8(2)(b) requires steps such as may be reasonably practicable to eliminate or mitigate any hazard or potential hazard before resorting to Personal Protective Equipment (PPE). However, in the case of COVID-19, a combination of controls is required, although the main principle is to follow the hierarchy of controls. While engineering and administrative controls are considered more effective in minimizing exposure to SARS-cov-2, PPE may also be needed to prevent certain exposures. While correctly using PPE can help prevent some exposures, it should not take the place of other prevention strategies. This is a risk assessment for dealing with the current COVID-19 situation in the construction site. It may not likely to cover all scenarios therefore Construction Management should develop Standard Operating Procedures as there may be unique circumstances and make a necessary call in the interest of the health and safety of employees. This is a risk assessment for dealing with the current COVID-19 situation in the construction site. It may not likely to cover all scenarios therefore management should develop SOP's as there may be unique circumstances and make a necessary call in the interest of the health and safety of Contractor employees.

Definitions

"BCEA" means the Basic Conditions of Employment Act, 1997 (Act No.75 of 1997)

"COVID-19" means Coronavirus Disease 2019

"Disaster Management Act" means the Disaster Management Act, 2002 (Act No.57 of 2002)

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

"PPE" means personal protective equipment

"virus" means SARS-Cov-2 virus

"Worker" means any person who works in an employer's workplace including an employee of the employer or contractor, a self-employed person or volunteer

"workplace" means any premises or place where a person performs work

"NICD" means National Institute for Communicable Diseases

"OMP" means Occupational Medical Practitioner

COVID 19 Risk Assessment:

- The Contractor must ensure that COVID 19 Risk Assessment (COVID 19 Health and Safety Plan) is conducted and submitted to the Client prior to the commencement of the construction work, it must be in line with the Client COVID 19 Health and Safety Specification.
- The Contractor must appoint COVID 19 Compliance Manager to ensure that all necessary COVID 19 safety precautions are implemented to prevent the spread.

Training and awareness:

- The Contractor must ensure that all employees are inducted on COVID19 contractor risk assessment to prevent the spread.
- The Contractor must ensure that the employees are trained on COVID 19 to prevent the spread of the virus, training records must be kept in the Safety File.
- COVID-19 Direction on Health and Safety in the Workplace Government Gazette dated 29 April 2020, must be used as guideline and be customized to specific construction site.
- The Contractor must provide workers with information that raises awareness in any form or manner, including where reasonably practicable leaflets and notices placed in conspicuous places in the workplace informing workers of the dangers of the virus, the manner of its transmission, the measures to prevent transmission such as personal hygiene, social distancing, use of cloth masks, cough etiquette and where to go for screening or testing if presenting with symptoms.

Hand Hygiene:

- The Contractor must provide adequate facilities for the washing of hands with soap and clean water on each construction site.
- The Contractor must provide 70% alcohol-based hand sanitizers at strategic points of the construction site.
- The Contractor must provide paper towels to dry hands after hand washing.

Cleaning and Disinfecting surfaces:

- The Contractor must take measures to ensure that all work surfaces and equipment are disinfected before work begins, regularly during the working period and upon completion of the work.
- The Contractor must ensure frequent cleaning and disinfecting of objects and surfaces that are touched regularly, particularly in areas of high use such as shared tools, taps, ablution facilities, hand rails, light switches, eating and change room areas, shared construction vehicles, etc. using appropriate disinfecting solutions such as clean water, soap and bleach.

Social Distancing:

- The Contractor must arrange the construction site to ensure minimal contact between workers and, as far as practicable, that there is a minimum of 1.5 meter distance between workers while they are working. Employees are aware to maintain social distance when working.
- The Contractor must ensure that social distancing measures are implemented through supervision of both the construction site and in the common areas outside the workplace. Through queue control or within the workplace, these measures may include dividing the workers into groups or staggering break times to avoid the concentration of workers in common areas.
- The Contractor must ensure that where the minimum distance is impossible, employees must always be instructed to wear a cloth mask/FFP1/2 mask or reducing the number of workers present in the construction site at any time to achieve the required social distancing.
- The Contractor must ensure that employees working in offices are provided with physical barriers placed between their workstations.

Personal Protective Equipment (PPE)

- The Contractor must ensure that every worker is provided with two cloth masks to be worn when in the workplace or public, which comply with the requirement set out in the guideline issued by the Department of Trade, Industry and Competition.

- The main benefit of everyone wearing a cloth mask is to reduce the amount of virus droplets being coughed up by those with infection and transmitted to others and to surface that others may touch.
- Every Contractor must ensure that workers are informed, instructed, trained and informed as to the correct use of cloth mask.
- The Contractor must ensure to issue face shield/visors where applicable as double protection

Point of entry screening

- The Contractor must identify the screening area for each construction site.
- The Contractor must ensure that the daily point of entry screening is conducted when entering construction site by a person nominated by the Contractor.
- The Contractor must ensure that all employees and visitors are screened and only those with all clear will be given clearance to carry on with construction work.
- The Contractor must ensure that during the screening a 1.5 m distance is maintained and FFP1/2 mask to be worn by a nominated person.
- The Contractor must ensure that the screening person is trained.
- The Contractor must ensure that a bottle of sanitiser is available at the screening area.
- The Contractor must ensure that the thermal device are provided during the screening process.
- The Contractor must ensure that all employees complete a COVID 19 Questionnaire which will be used to screen potential risk personnel entering the construction site.

Symptomatic employees

- The Contractor must ensure that any person who ticks YES to one or more symptoms will be sent home and be advised to seek testing by a healthcare provider.
- The Contractor must ensure that employees who are sick with continuous cough, sore throat, difficulty breathing, or a high temperature in the workplace will be encouraged to stay home.
- The Contractor must ensure that the positive tested COVID 19 case, the employee is on paid sick leave in terms of section 22 of BCEA or if the employee's sick leave is exhausted, the Contractor shall apply for an illness benefit.
- The Contractor must ensure that employees confirmed to have COVID 19 will be managed in line with National Department of Health COVID 19 guidelines.
- The Contractor must isolate the worker with confirmed COVID case and issued him/her with FFP2 or surgical mask, arrange for the worker to be transported for further medical examination or testing, in a manner that does not place other workers or members of the public at risk
- The Contractor must ensure that the driver who is transporting the Person Under Investigation is provided with surgical mask or FFP2 mask.
- The Contractor must assess the risk of transmission, disinfect the work area and refer those workers who may be at risk for screening to prevent possible transmission.

- The Contractor must advise the Communicable Disease Centre (CDC) so that other contacts be identified and be investigated
- The Contractor must ensure that tested positive for COVID 19 is not discriminated in terms of Employment Equity Act no. 55 of 1998.
- The Contractor must ensure that if there is evidence that the worker contracted COVID 19 as a result of occupational exposure, lodge a claim for compensation in terms of the Compensation for Occupational Injuries and Diseases Act no. 130 of 1993.
- The Contractor must ensure that if a worker has been diagnosed with COVID 19 and isolated in accordance with the National Department of Health Guidelines, a Contractor may only allow a worker to return to work on the following conditions, the worker has undergone a medical evaluation confirming that the worker has been tested negative for COVID 19.

Emergency Numbers

- Corona virus (COVID-19) 24-Hour Hotline number: 0800 029 999
- Corona virus (COVID-19) WhatsApp Number: 0600 12 3456
- COVID-19 National Crisis Helpline - 0861 322 322
- NICD (National Institute of Communicable Diseases) 24-Hour toll-free hotline number: 0800 029 999 or 0800 111 132
- SAPS gender-based violence service complaints (SAPS) - 0800 333 177
- GBV (Gender Based Violence) Command Centre -0800 428 428/ *120*7867# (free from any cell phone)/ SMS Line: 32312
- Women Abuse Helpline - 0800 150 150
- People Opposing Women Abuse (POWA) - Tel: 011 642 4345/ Afterhours cellphone: 0837651235
- Child Line - 0800 055 555
- Lifeline South Africa - 0800 012 322 (free on mobile networks including landlines)
- FAMSA - Advice on family relationships - 011 975 7107
- Human trafficking - Report cases of human trafficking - hotline operated by the Salvation Army and Be Heard - 08007 37283 (0 8000-rescue)
- National Human Trafficking Helpline - 0800 222 777
- Persons with Disabilities - SMS 'help' to 31531
- National AIDS Helpline - 0800 012 322
- Suicide Helpline - 0800 567 567
- Stop Gender Violence - Anonymous, confidential and accessible telephonic information, counselling and referrals, in all 11 official languages - 0800 150 15
- Substance Abuse Helpline - 0800 12 13 14

Recommended Best Practice

- The Contractor must ensure that vulnerable and 60 years old workers are identified and received a special measure for their protection.
- The Contractor must ensure that for communication strategy Microsoft Team, ZOOM or Skype or cell phones are used to prevent the spread of COVID 19 virus.
- The Contractor must ensure to keep the workplace well ventilated by natural or mechanical means to reduce the SARS – CoV – 2 viral loads.

Returnable:

When submitting your safety file for approval, please ensure that the following documents are attached:

- COVID19 Health Risk Management Plan signed by 16(1) or 16(2) – Chief executive officer or assistant Chief executive officer
- COVID19 Policy signed by 16(1) – Chief executive officer
- COVID19 Manager appointed in writing - preferable any person who is conversant and with influence on site.
- COVID19 Risk assessment, outlining all the processes as detailed on your COVID19 Health Risk Management Plan

References

- COVID-19 Disaster Management Act
- Occupational Health & Safety Act 85 of 1993
- The Department of Employment and Labour: Workplace Preparedness: COVID-19 (SARS-CoV-19 virus)
- COVID-19 Occupational Health and Safety Measures in Workplaces COVID-19 (C19 OHS), 2020
- Hazardous Biological Agents Regulations
- National Institute for Occupational Health (NIOH)

N.B. This must be read in conjunction with the OHS Directive issued by Department of Employment and Labour.

38. DEMOLITION WORK

The Principal Contractor must appoint a competent person in writing to supervise and control all demolition work on site. A contractor must ensure that before any demolition work is carried out, and in order to ascertain the method of demolition to be used, a detailed structural engineering survey of the structure to be demolished is carried out by a competent person and that a method statement on the procedure to be followed in demolishing the structure is developed by that person. During a demolition, the competent person contemplated in sub regulation (1) must check the structural integrity of the structure at intervals determined in the method statement contemplated in sub regulation (2), in order to avoid any premature collapses

39. PUBLIC SAFETY

As indicated in the scope of work that the project is located in a township, therefore, the contractor must explain how he intended to conduct his construction work without affecting the health or safety of the community and ensuring that there is no destruction of the services and local businesses. The site shall at all times be secured to prevent the unauthorized access of persons to construction risk areas. Appropriate health and safety signage shall be posted and access control to site must be exercised via a single access point. All members entering the site must indicate in what capacity they are visiting the site. The access point must be designed and constructed to allow for temporary parking, entry of construction vehicles, entry of personnel transport vehicles and entry of individual workers and other persons. The principal Contractor shall ensure that each person visiting the site shall be inducted to the site and such abridged induction shall outline the hazards from on-site activities and the precautions to be observed to avoid or minimize those risks. Visitors must only enter when accompanied by a responsible person designated by the Principal Contractor.

PART C4: SITE INFORMATION

C4.1 LOCALITY PLAN

C4.2 CONDITIONS ON SITE

C4.3 TEST RESULTS

C4.1 LOCALITY PLAN

Refer to attached locality maps overleaf.

C4.2 CONDITIONS ON SITE

The site is characterised by steep concave lower slopes becoming moderately steep to steep planar to convex steep slopes thereafter becoming moderate to gentle in the upper portions along the spine of several ridges. Deeply incised tributaries are present throughout the site and these drainage lines flow into nearby rivers. Dense RDP and informal dwellings are present on cut to fill platforms across the site with many of these dwellings having informal and rudimentary methods of retaining cut and fill embankments.

Due to the steepness of the site, extensive and dense informal and RDP cut to fill housing platforms are present with fill thicknesses varying considerably between 0.5m and >3.0m with most cut and fill embankments being oversteep and often near vertical. The abovementioned cut to filling of the site has resulted in large quantities of fill material being present. The bulk fill material is derived from the in-situ colluvial and residual tillite material mixed with rubble, plastic, glass and various fill material. The bulk fill material can generally be described as a brown, loose, gravelly sand containing assorted fill material to a pale brown, loose to medium dense, silty sand containing minor gravels and fill fragments.

The soil profile generally comprises a thin hillwash and residual tillite overlying tillite bedrock at varying depths. The thin hillwash and residual tillite can generally be described as a yellow orange, firm to stiff, intact, fine gravelly sandy clay to a yellow pale brown, medium dense, intact, gravelly silty sand. Where present, residual tillite thicknesses generally range between 0.2 and up to 1.2m thick. Relatively shallow weathered tillite bedrock is found across the entire site. In the upper slope portions, highly weathered tillite bedrock is generally encountered at depths ranging from 0.5 to 1.5m depth.

Considering the extent of the site, tenderers are to note that soil conditions may vary extensively. The summary above is merely intended to provide a general outlook for the soil conditions, however, tenderers are responsible for familiarizing themselves with the site conditions.

C4.3 TEST RESULTS

There are no specific test results.