CLUSTER

Human Settlement, Engineering, and Transport

UNIT

eThekwini Transport Authority

DEPARTMENT

Road Systems Management

PROCUREMENT DOCUMENT

INFRASTRUCTURE

Documents are to be obtained, free of charge, in electronic format, from the National Treasury's eTenders website or the eThekwini Municipality's website.

Contract No: 1T-48646

Contract Title: Widening of carriageway on Corridor C3 BRT Route at ERF 77 Pineside Road on Qashana Khuzwayo Road, Pinetown, Ward 18 and 21

Est. CIDB Grade/ Class: 7 CE

CLARIFICATION MEETING AND QUERIES

Clarification Meeting: Compulsory Clarification Meeting

Meeting Location, Date, Time: On 03 August 2023 at Midway Crossing Mall, eThekwini Municipality | ETA – Go!Durban, A225 Zavala Road, Ntuzuma A, 4360 at 09h00

Queries can be addressed to: The Employer's Agent's Representative:
Precious Radebe
Tel: 031-322-0032
Email: Precious.Radebe@durban.gov.za
All email queries to be submitted by 17 August 2023 and consolidated questions and answers to be uploaded on website on 24 August 2023.

TENDER SUBMISSION

Delivery Location: The Tender Box in the foyer of the Municipal Building
166 KE Masinga Road, Durban

Closing Date/ Time: Friday, 01 September 2023 at 11h00

FACSIMILE, eMAIL, or POSTED TENDERS WILL NOT BE ACCEPTED

Issued by:

ETHEKWINI MUNICIPALITY

Deputy Head: Road Systems Management

Date of Issue: 28/07/2023

Document Version 24/02/2023(c)

FOR OFFICIAL USE ONLY

Tenderer Name:			VAT Registered: Yes No
	Price (excl)	VAT	Price (incl)
Submitted:	R	R	R
Corrected:	R	R	R

FOR OFFICIAL USE ONLY

Tenderer Name:			VAT Registered: Yes No
	Price (excl)	VAT	Price (incl)
Submitted:	R	R	R
Corrected:	R	R	R

INDEX to PROCUREMENT DOCUMENT

PART T1: TENDERING PROCEDURES

T1.1.1: TENDER NOTICE AND INVITATION TO TENDER

Tenders are hereby invited for the works to the Widening of carriageway on Corridor C3 BRT Route at Erf 77 Pineside Road on Qashana Khuzwayo Road, Pinetown, Ward 18.

Subject	Description	Tender Data Ref.
Employer	The Employer is the eThekwini Municipality as represented by: Deputy Head: **Road Systems Management**	F.1.1.1
Tender Documents	Documents can only be obtained in electronic format, issued by the eThekwini Municipality. Documentation can be downloaded from the **National Treasury's eTenders website** or the **eThekwini Municipality's Website**. The entire document should be printed (on A4 paper) and suitably bound by the tenderer.	F.1.2
Eligibility	It is estimated that tenderers should have a CIDB contractor grading designation of **7 CE** (or higher). The CIDB provisions in relation to a Contractor's Potentially Emerging (PE) status do not apply.	F.2.1.1
Clarification Meeting	**On 03 August 2023 at Midway Crossing Mall, eThekwini Municipality | ETA – Go!Durban, A225 Zavala Road, Ntuzuma A, 4360 at 09h00**	F.2.7
Seek Clarification	Queries relating to these documents are to be addressed to the Employer's Agent's Representative whose contact details are: **Precious Radebe** **Tel: 031-322-0032** **Email: Precious.Radebe@durban.gov.za** **All email queries to be submitted by 17 August 2023 and consolidated questions and answers to be uploaded on website on 24 August 2023.**	F.2.8
Submitting a Tender Offer	Tender offers shall be delivered to: **The Tender Box in the foyer of the Municipal Building** **166 KE Masinga Road, Durban**	F.2.13
Closing Time	Tender offers shall be delivered on or before **Friday, 01 September 2023** at or before **11h00**.	F.2.15
Evaluation of Tender Offers	**Either the 80/20 or 90/10** Price Preference Point System, as specified in the PPPFA Regulations 2022 will be applied in the evaluation of tenders. Refer to Clause F.3.11 of the Tender Data for the **Specific Goal(S)** for the awarding of Preference Points, and other related evaluation requirements.	F.3.11
Requirements for sealing, addressing, delivery, opening and assessment of tenders are further 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 eThekwini Municipality as represented by:
Deputy Head: **Road Systems Management**

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

1) This procurement document.

2) "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.

3) "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.

4) Drawings, issued separately from this document, or bound in Section C3.4 (as an Annexure).

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 Employer's current (as at advertising date) Supply Chain Management Policy.
   - The Preferential Procurement Policy Framework Act No 5 of 2000, and the Preferential Procurement Policy Framework Act Regulations (2022).
   - 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).
   - SANS 1921:2004 – Construction and Management Requirements for Works Contract, Parts 1-3.
   - Any other eThekwini Policy documents referenced in the Tender Documents.

Electronically downloaded documentation is obtainable from the National Treasury's **eTenders Website** or the **eThekwini Municipality's Website** at URLs:

- https://www.etenders.gov.za/
- https://www.durban.gov.za/pages/business/procurement

The entire downloaded document should be printed on white A4 paper (single-sided) and suitably bound by the tenderer.

F.1.4 Communication and employer's agent:

The Employer's Agent's is:
Bethuel Manthoadi
031 322 8651
bethuel.manthoadi@durban.gov.za

The Employer's Agent's Representative is:
Mpho L S Makhanya
031 322 9977
mpho.makhanya@durban.gov.za

The Project Manager is:
Precious Radebe
031 322 0032
precious.radebe@durban.gov.za

The Tenderer's contact details, as indicated in the Contract Data: Clause C1.2.2.2 "Data to Be Provided by Contractor", shall be deemed as the only valid contact details for the Tenderer for use in communications between the Employer's Agent and the Tenderer.

F.2: TENDERER'S OBLIGATIONS

F.2.1.1 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 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) The tenderer has not submitted, with this tender, a valid Letter of Good Standing from the

Compensation Commissioner as proof of being registered and in good standing with the compensation fund. Reference is to be made to Returnable Document T2.2.13.

(g) The tender fails to complete and sign the Declaration of Municipal Fees in T2.2: "Returnable Documents" and submits the required documentation. Reference is to be made to Returnable Document T2.2.12.

SCM Policy (Cl.14(4)) requires suppliers/ service providers/ contractors to be registered on the eThekwini Municipality Central Supplier Database or be in a position to be so before the award.

In the event of the Tenderer not being registered on the eThekwini Municipality's Central Supplier Database, the tenderer must register on the internet at www.durban.gov.za by following these links:

- Business
- Supply Chain Management (SCM)
- Accredited Supplier and Contractor's Database.

The following are to be noted:

(a) The information for registration as in the possession of the eThekwini 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.

F.2.1.2 **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.

It should be noted that this contract is not part of a Targeted Development Programme (TDP). The CIDB provisions in relation to a Contractor's Potentially Emerging (PE) status do not apply.

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

"Documents are to be obtained, free of charge, in electronic format, from the **National Treasury's eTenders website** or the **eThekwini Municipality's Website**. The entire electronically downloaded document should be printed on white A4 paper (single-sided) 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 websites specified in F.1.2. Tenderers are to ensure that the eTenders website is consulted for any published addenda pertaining to this tender up to 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 physical or 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:**
On 03 August 2023 at Midway Crossing Mall, eThekwini Municipality | ETA – Go!Durban, A225 Zavala Road, Ntuzuma A, 4360 at 09h00

In the event of a Compulsory Clarification Meeting, Tenderers must sign the attendance register in the name of the tendering entity. The Tenderer's representative(s) at the clarification meeting must be able to clearly convey the discussions at the meeting to the person(s) responsible for compiling the entity's tender offer.

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 eThekwini Municipality.

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

- Contract No. : **1T-48646**
- Contract Title : **Widening of carriageway on Corridor C3 BRT Route at ERF 77 Pineside Road on Qashana Khuzwayo Road, Pinetown, Ward 18 and 21**

The Employer's address for delivery of tender offers is:

The Tender Box in the foyer of the Municipal Building
166 KE Masinga Road, Durban

Parts of each tender offer communicated on paper shall be submitted as an original, plus one(1) copy.

Tenderers are to include, with their paper ("hard copy") submission, a two (2) memory-sticks each containing an electronically scanned (300 dpi resolution) Public Document Format (PDF) copy of their complete bid submission. This PDF file should be named using the contract number and the Tenderer's name, eg. "**1T-48646 – Tenderers Name.PDF**". The memory-sticks must be labelled with the Tenderer's name and securely fixed to each paper submission.

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, 01 September 2023**
- Time : **11h00**

F.2.16 **Tender offer validity**: The Tender Offer validity period is 120 Days from the closing date for submission of tenders.

F.2.20 **Submit securities, bonds, policies:** The tenderer is required to submit with his tender a letter of intent from an approved insurer undertaking to provide the Performance Bond to the format included in T2.2 of this procurement document.

F.2.23 **Certificates**: Refer to 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.

Tenderers are to include, at the back of their tender submission document, a printout of the required documents/ certificates.

The Form of Offer (C1.1.1), Data to be provided by the Contractor (C1.2.2.2), and the Bill of Quantities (C2.2) are also required to be completed in full.

Tax Clearance
Reference is also to be made to returnable form T2.2.3: "Tax Compliance Status PIN/ Tax Clearance Certificate".

SARS has introduced a new Tax Compliance Status System. Tenderers must 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. This TCS PIN is to be entered on Returnable Document T2.2.1: "Compulsory Enterprise Questionnaire". Separate Tax Clearance Certificates / TCS PINs are required for each entity in a Joint Venture.

Failure to comply will make the tender non-responsive.

Compensation Commissioner
Reference is also to be made to returnable form T2.2.13: "Eligibility: Registration with Compensation Commissioner".

The tenderer is to supply proof of being registered and in good standing with the compensation fund by submitting a valid **Letter of Good Standing** from the Compensation Commissioner.

Failure to comply will make the tender non-responsive.

Central Supplier Database (CSD)
Reference is also to be made to returnable form T2.2.14: "Eligibility: CSD Registration Report".

The entities (full) **CSD 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.

CIDB Registration
Reference is also to be made to returnable form T2.2.15: "Eligibility: Verification of CIDB Registration and Status".

Registration with the CIDB must be reflected as "Active" at time of tender closing.

Tenderers are to include with their submission a printout of their **CIDB Registration**, 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 CIDB printout(s) is to be indicated on the printout.

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 same platform(s) as the Tender Notification (refer to F.1.2).

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 in the SCM Boardroom, 6th Floor, Engineering Unit Building, 166 KE Masinga Road, Durban.

F.3.11 **Evaluation of Tender Offers:**

Eligibility

Tenders will be checked for compliance with the ELIGIBILITY requirements, as specified in T1.2.2 Clause F.2.1. Tenderers not in compliance will be deemed non-responsive.

Functionality

FUNCTIONALITY will be evaluated to determine the responsiveness of tenders received. The minimum score for FUNCTIONALITY is 70 points. Those tenders not achieving the minimum score will be deemed non-responsive.

The functionality Criteria, Sub-Criteria, Points per Criteria/ Sub-Criteria, Returnable Documentation and Schedules, Method of Evaluation, and Prompts for Judgement are as specified in T1.2.3: “Additional Conditions of Tender”.

Preference Point System

The financial offer will be reduced to a comparative basis using the **Tender Assessment Schedule**.

The procedure for the evaluation of responsive tenders is **PRICE AND PREFERENCE WITH FUNCTIONALITY** in accordance with the Employer’s current SCM Policy, the Preferential Procurement Policy Framework Act (5 of 2000), and the Preferential Procurement Policy Framework Act Regulations (2022).

Price Points

It is unclear (at the time of advertising) which of the two preference point systems applies, either the **80/20 or 90/10** preference point system will apply, determined by the price offered by the lowest acceptable tender.

Preference Points

Reference is also to be made to T2.2.7: “MBD 6.1: Preference Points Claim”.

The Preference Points (either 20 or 10) will be derived from points allocated/ claimed for **Specific Goals** as indicated in the table(s) below, according to the specified **Goal/ Category Weightings**.

- **Ownership Goal**
  Goal Weighting: 25%

  The tendering entity's **Percentage Ownership**, in terms of the **Ownership Category(s)** listed below, is to be used in the determination of the tenderer's claim for **Preference Points**.

Ownership Categories	Criteria	80/20	90/10
Race: Black (w1)	Equals 0%	0	0
	Between 0% and 51%	8	4
	Greater or equal to 51% and less than 100%	16	8
	Equals 100%	20	10
Gender: Female (w2)	Equals 0%	0	0
	Between 0% and 51%	8	4
	Greater or equal to 51% and less than 100%	16	8
	Equals 100%	20	10
Disabilities (w3)	Equals 0%	0	0
	Between 0% and 51%	8	4
	Greater or equal to 51% and less than 100%	16	8
	Equals 100%	20	10
	Maximum Goal Points:		

The **Weightings** of the **Ownership Categories** will be:
- w1 = 50%, w2=30%, w3=20% (where: w1 + w2 + w3 = 100%)

Proof of claim as declared on MBD 6.1 (1 or more of the following will be used in verifying the tenderer's status)
- Companies and Intellectual Property Commission registration document (CIPC)
- CSD report.
- B-BBEE Certificate of the tendering entity.
- Consolidated BBBEE Certificate if the tendering entity is a Consortium, Joint Venture, or Trust (Issued by verification agency accredited by the South African Accreditation System).
- Agreement for a Consortium, Joint Venture, or Trust.

- **RDP Goal: The promotion of South African owned enterprises**
  Goal Weighting: 0%

  The tendering entity's **Address** (as stated on the National Treasury Central Supplier Database (CSD) or on the eThekwini Municipality Vendor Portal) is to be used in the determination of the tenderer's claim for **Preference Points** for this Specific Goal.

Location	80/20	90/10
Not in South Africa	n/a	n/a
South Africa	n/a	n/a
Kwa Zulu Natal	n/a	n/a
eThekwini Municipality	n/a	n/a
Maximum Goal Points:	n/a	n/a

Proof of claim as declared on MBD 6.1 (1 or more of the following will be used in verifying the tenderer's status)
- CSD report

- **RDP Goal: The promotion of enterprises located in a specific municipal area**

Goal Weighting: 15%

The tendering entity's **Address** (as stated on the National Treasury Central Supplier Database (CSD) or on the eThekwini Municipality Vendor Portal) is to be used in the determination of the tenderer's claim for **Preference Points** for this Specific Goal. The **regions** and **zones** (or wards) within the eThekwini Municipality are as specified on the Part C1.2.3.2 of this procurement document.

Municipal Area	**80/20**	**90/10**
Not within eThekwini Municipality	0	0
Within eThekwini Municipality	8	4
Within the specified region / Adjoining Wards	16	8
Within the specified zone / Project Ward(s)	20	10
Maximum Goal Points:		

Proof of claim as declared on MBD 6.1 (1 or more of the following will be used in verifying the tenderer's status)
- CSD Report

- **RDP Goal: The promotion of export-oriented production to create jobs**
  Goal Weighting: 0%

The tendering entity's **Business Type**, in terms of the categories below, is to be used in the determination of the tenderer's claim for **Preference Points** for this Specific Goal.

Local content and production	**80/20**	**90/10**
Retailer	n/a	n/a
Distributor	n/a	n/a
Wholesaler	n/a	n/a
Manufacturer	n/a	n/a
Maximum Goal Points:	n/a	n/a

Proof of claim as declared on MBD 6.1 (1 or more of the following will be used in verifying the tenderer's status)
- SABS/ SANAS certification

- **RDP Goal: Creation of new jobs to address black youth unemployment**
  Goal Weighting: 20%

The tendering entity's **Commitment to Appointment or Actual Appointment**, in terms of the categories below, is to be used in the determination of the tenderer's claim for **Preference Points** for this Specific Goal.

Number of jobs created	**80/20**	**90/10**
0 – 49	5	3
50 – 100	10	7
Over 100	20	10
Maximum Goal Points:		

Proof of claim as declared on MBD 6.1 (1 or more of the following will be used in verifying the tenderer's status)
- Commitment letter to appoint youth from local ward (for a year or more)
- Appointment letters signed by local councillor or chief (for a year or more)
- Consider other evidence etc Copies of IDs and proof of address in Ethekwini

- **RDP Goal: Social Upliftment of communities**
  Goal Weighting: 15%

The tendering entity's **Involvement in Corporate Social Investment initiatives**, in terms of the categories below, is to be used in the determination of the tenderer's claim for **Preference Points** for this Specific Goal.

Corporate Social Investment	80/20	90/10
In-Service/New graduate employment	5	2.5
Legacy project(s)	5	2.5
Candidate Professional Development	5	2.5
Infrastructure repairs and maintenance	5	2.5
Maximum Goal Points:		

Proof of claim as declared on MBD 6.1 (1 or more of the following will be used in verifying the tenderer's status)
- List and value of projects identified through the local councillor/chief in a letter form (as a percentage of the tendered value)

- **RDP Goal: The promotion SMMEs owned by PPG – Contracts > R5m**
  Goal Weighting: 25%

The tendering entity's **Commitment to Sub-Contracting** (to Sub-Contractors conforming to the specified ownership demographics) the **percentage works**, as specified below, is to be used in the determination of the tenderer's claim for **Preference Points** for this Specific Goal.

Contract Participation Goal	80/20	90/10
Sub-contracting <10%	0	0
Sub-contracting ≥10% < Sub-contracting < 23%	10	5
Sub-contracting ≥23%	20	10
Maximum Goal Points:		

Proof of claim as declared on MBD 6.1 (1 or more of the following will be used in verifying the tenderer's status)
- Contract Participation Goal Plan (% work to be allocated)

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 n**ot 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**.

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.

The municipality has a firm intention to proceed with the work, subject to funding being identified. Notwithstanding clause F.1.1.3 of the Standard Conditions of Tender, the municipality reserves the right to award or not award the tender based on the municipalities available budget.

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).

Tenderers are to include, with their paper ("hard copy") submission, a two (2) memory-sticks each containing an electronically scanned (300 dpi resolution) Public Document Format (PDF) copy of their complete bid submission. This PDF file should be named using the contract number and the Tenderer's name, eg. "**1T-48646 – Tenderers Name.PDF**". The memory-sticks must be labelled with the Tenderer's name and securely fixed to each paper submission.

T1.2.3 ADDITIONAL CONDITIONS OF TENDER

T1.2.3.1 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

T1.2.3.2 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.

T1.2.3.3 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.

T1.2.3.5 Functionality Specification

The value of W_2 is 100. The Functionality criteria (and sub criteria if applicable) and maximum score in respect of each of the criteria are as follows:

Functionality Criteria / Sub Criteria		Maximum Points Score
Tenderer's Experience		35
	Contracts Manager	15
	Site agent	10
	Foremen	10
Preliminary Programme		15
Construction Methodology & Quality Control		15
Maximum possible score for Functionality (M_s)		100

The minimum number of evaluation points for Functionality is **70**. Only those tenderers who achieve the minimum number of Functionality evaluation points (or greater) will be eligible to have their tenders further evaluated.

Functionality shall be scored by not less than three evaluators and the scores of each of the evaluators will be averaged, weighted, and then totalled to obtain the final score for Functionality. Each evaluation criteria will be assessed in terms of six indicators and scores allocated according

to the following table:

Level 0 No submission/No substantive submission	**Level 1** Generic & dissatisfactory submission	**Level 2** Satisfactory submission	**Level 3** Good submission	**Level 4** Excellent submission
0	40	70	90	100

Evaluation criteria will be adjudicated according to submissions made in accordance with the following schedules, which are found in T2.2: Returnable Schedules:

Functionality Criteria	**Returnable Schedules**
Tenderer's Experience	• Experience of Tenderer (see F.2.1.3)
Project Organogram and Experience of Key Staff	• Proposed Organization and Staffing • Key Personnel • CV's with Experience of Key Personnel
Preliminary Programme	• Preliminary Programme
Construction Methodology & Quality Control	• Construction Approach, • Methodology, and Quality Control • Schedule of Proposed Subcontractors • Plant and Equipment

Unless otherwise stated, evaluation criteria will be adjudicated with respect to the contract specific Scope of Work, as specified in C.3. In this regard the following definitions apply to the evaluation criteria prompts for judgement:

- "**successfully completed**" implies a project has been completed on time and to specification;
- "**similar nature**" implies projects that were of a value of at least 70% of this tender's value, and had a comparable Scope of Work in terms of technical requirements and operations;
- "**experience**" implies experience on projects of a similar nature;
- "**accredited degree / diploma**" implies a minimum 3 year qualification within the built environment, from a registered University or University of Technology.

Criterion: Tenderer's Experience	
Level 0	No information provided; OR submission of no substance / irrelevant information provided
Level 1	To have successfully completed 1 project of a similar nature within the past 7 years.
Level 2	To have successfully completed 2 to 3 projects of a similar nature within the past 7 years.
Level 3	To have successfully completed 4 to 5 projects of a similar nature within the past 7 years.
Level 4	To have successfully completed +6 projects of a similar nature within the past 7 years.

Criterion: Project Organogram and Experience of Key Staff			
	CONTRACTS MANAGER	**SITE AGENT**	**FOREMAN**
Level 0	No information provided OR submission of no substance / irrelevant information provided OR less than 2 year's experience OR Relevant accredited diploma / degree and less than 1 year's experience.	No information provided OR submission of no substance / irrelevant information provided OR less than 2 year's experience. OR Relevant accredited diploma / degree and less than 1 year's experience.	No information provided OR submission of no substance / irrelevant information OR Less than 2 year's experience.
Level 1	Relevant accredited diploma / degree and minimum 1 year's experience.	Relevant accredited diploma / degree and minimum 1 year's experience.	Minimum 2 year's experience.
Level 2	Relevant accredited diploma / degree and minimum 2 year's experience.	Relevant accredited diploma / degree and minimum 2 year's experience.	Minimum 3 year's experience.
Level 3	Relevant accredited diploma / degree and minimum 4 year's experience.	Relevant accredited diploma / degree and minimum 4 year's experience.	Minimum 5 year's experience.
Level 4	Relevant accredited diploma / degree and minimum 7 year's experience.	Relevant accredited diploma / degree and minimum 7 year's experience.	Minimum 8 year's experience.
Level 5	Relevant accredited diploma / degree and minimum 9 year's experience.	Relevant accredited diploma / degree and minimum 9 year's experience.	Minimum 10 year's experience.

Criterion: Preliminary Programme	
Level 0	No information provided; OR submission of no substance / irrelevant information provided
Level 1	The tenderer has misunderstood certain aspects of the Scope of Work and does not deal with the critical aspects of the project.
Level 2	The programme does not adequately deal with the critical characteristics of the project or the plan and manner in which risk is to be managed.
Level 3	Programme covers all the applicable individual activities which are in an acceptable sequence, with appropriate durations, and is in accordance with generally accepted construction practice, and is in line with Clause 1.1.1.14 of the Conditions of Contract (time for achieving Practical Completion). Programme must show the critical path
Level 4	In addition to the requirements of level 3, the programme is loaded with the preliminary cash-flow projections and is sufficiently flexible to accommodate changes that may be required during execution within project completion time.

Criterion: Construction Methodology & Quality Control	
Level 0	No information provided; OR submission of no substance / irrelevant information provided
Level 1	The technical approach / methodology, plant and equipment is poor and gives no relevant information in satisfying the projects objectives Quality control statement is poor with no relevant information
Level 2	The technical approach and/or methodology is less than acceptable and unlikely to satisfy project objectives or requirements. Plant and equipment is unlikely to provide adequate protection of the works. Quality control statement is generic.
Level 3	Brief overview of a site specific methodology which encompasses all programmed activities in appropriate order and includes staff, plant and equipment resources, including subcontractors if applicable, a brief description of preparatory work, construction processes including finishing works for each activity. Quality control statements are site specific with statements covering required sampling and testing requirements for the programmed activities.
Level 4	The methodology is specifically tailored to address specific project requirements. The methods and approach to managing risk etc. are specifically tailored to the critical characteristics of the project. The plant and equipment are specifically tailored to the project requirements and are sufficiently adaptable to accommodate changes that may be required during execution Quality control statements are site specific covering required sampling and testing for programmed activities including site specific quality control checklist for programed activities

PART T2: RETURNABLE DOCUMENTS

T2.1 LIST OF RETURNABLE DOCUMENTS

T2.1.1 General

The Tender Submission Documentation must be submitted in its entirety. All forms must be properly completed as required.

The Tenderer is required to complete each and every Schedule and Form listed below to the best of their 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 non-responsive.

T2.1.2 Returnable Schedules, Forms and Certificates

Entity Specific

Eligibility

Technical or Functionality Evaluation

T2.2 RETURNABLE SCHEDULES, FORMS, AND CERTIFICATES

The returnable schedules, forms, and certificates, as listed in T2.1.2, can be found on pages 19 to 53.

NOTE

The **Form of Offer** (C1.1.1), The **Data to be Provided by Contractor** (C1.2.2.2), and the **Bill of Quantities** (C2.2) are also required to be completed by the tenderer.

T2.2.1 COMPULSORY ENTERPRISE QUESTIONNAIRE

Ref	Description	Complete or Circle Applicable
1.1	Name of enterprise	
1.2	Name of enterprise's representative	
1.3	ID Number of enterprise's representative	
1.4	Position enterprise's representative occupies in the enterprise	
1.5	National Treasury Central Supplier Database Registration number	**MAAA**
1.6	eThekwini Supplier Database: Reference number (PR), if any:	**PR**
1.7	VAT registration number, if any:	
1.8	CIDB registration number, if any:	
1.9	Department of Labour: Registration number	
1.10	Department of Labour: Letter of Good Standing Certificate number	

2.0 **Particulars of sole proprietors and partners in partnerships (attach separate pages if more than 4 partners)**

	Full Name	Identity No.	Personal income tax No. *
2.1			
2.2			
2.3			
2.4			

3.0 **Particulars of companies and close corporations**

3.1	Company registration number, if applicable:	
3.2	Close corporation number, if applicable:	
3.3	Tax Reference number, if any:	
3.4	South African Revenue Service: Tax Compliance Status PIN:	

4.0 **Record in the service of the state** (Insert on a separate page if necessary)

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

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 mths

5.0 **Record of spouses, children, and parents in the service of the state** (Insert on a separate page if necessary)

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

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 mths

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

i) authorizes the Employer to verify the tenderers tax clearance status from the South African Revenue Services that it is in order.

ii) confirms that the neither the name of the enterprise or the name of any partner, manager, director or other person, who wholly or partly exercises or may exercise, control over the enterprise appears on the Register of Tender Defaulters established in terms of the Prevention and Combating of Corrupt Activities Act of 2004.

iii) confirms that no partner, member, director or other person, who wholly or partly exercises, or may exercise, control over the enterprise appears, has within the last five years been convicted of fraud or corruption.

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 tenderers 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.

NAME (Block Capitals): **Date**

SIGNATURE:

T2.2.2 CERTIFICATE OF ATTENDANCE AT CLARIFICATION MEETING / SITE INSPECTION

Reference is to be made to Clauses F.2.1(c) and F.2.7 of the Tender Data.

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: ……..….

T2.2.3 TAX COMPLIANCE STATUS PIN / TAX CLEARANCE CERTIFICATE

Reference is to be made to Clauses F.2.23 and F.3.13(a) of the Tender Data.

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.

The TCS PIN(s) are to be entered under item 3.4 on form **T2.1.2.1: Compulsory Enterprise Questionnaire**.

Tenderers are to include, at the back of their tender submission document, a printout of their Tax Compliance Status PIN (TCS PIN) OR an original Tax Clearance Certificate.

Failure to include the required document will make the tender submission non-responsive.

I, the undersigned, who warrants that they are authorised to sign on behalf of the Tenderer, confirms that the information contained in this form is within my personal knowledge and is to the best of my belief both true and correct, ***and that the requested documentation has been included in the tender submission****.*

NAME (Block Capitals): ---------- **Date**

SIGNATURE: ---------- ----------

T2.2.4 CONTRACTOR'S HEALTH AND SAFETY DECLARATION

If Functionality is applicable as part of tender evaluation, reference is to be made to Clause F3.11.9 of the of the Conditions of Tender.

Reference is to be made to Clauses F.2.1(e) and F.2.23 of the Tender Data.

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 - Yes or No)**:

	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) 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, the undersigned, hereby undertake, if this 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, the undersigned, confirm that copies of this 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, the undersigned, hereby confirm that adequate provision has been made in the 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, the undersigned, agree that failure to complete and execute this declaration to the satisfaction of the Client will mean that this company is unable to comply with the requirements of the OHSA 1993 Construction Regulations (2014) and accept that this tender will be prejudiced and may be rejected at the discretion of the Client.

I, the undersigned, who warrants that they are authorised to sign on behalf of the Tenderer, confirms that the information contained in this form is within my personal knowledge and is to the best of my belief both true and correct.

NAME (Block Capitals): **Date**

SIGNATURE:

T2.2.5 MBD 4: DECLARATION OF INTEREST

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

(a) a member of:
  (i) any municipal council.
  (ii) any provincial legislature.
  (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.
(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.

1 No bid will be accepted from persons **in the service of the state**[1].

2 Any person, having a kinship with persons **in the service of the state**, including a blood relationship, may make an offer or offers in terms of this invitation to bid. In view of possible allegations of favouritism, should the resulting bid, or part thereof, be awarded to persons connected with or related to **persons in service of the state**, it is required that the bidder or their authorised representative declare their position in relation to the evaluating/adjudicating authority and/or take an oath declaring his/her interest.

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

3.1	Name of enterprise	Complete T2.1.2.1 Item 1.1
	Name of enterprise's representative	Complete T2.1.2.1 Item 1.2
3.2	ID Number of enterprise's representative	Complete T2.1.2.1 Item 1.3
3.3	Position enterprise's representative occupies in the enterprise	Complete T2.1.2.1 Item 1.4
3.4	Company Registration number	Complete T2.1.2.1 Item 3.1 or 3.2
3.5	Tax Reference number	Complete T2.1.2.1 Item 3.3
3.6	VAT registration number	Complete T2.1.2.1 Item 1.7

3.7 The names of all directors / trustees / shareholders / members / sole proprietors / partners in partnerships, their individual identity numbers and state employee numbers must be indicated in paragraph 4 below. In the case of a joint venture, information in respect of each partnering enterprise must be completed and submitted.

		Circle Applicable	
3.8	Are you presently in the service of the state?	YES	NO
	If yes, furnish particulars: ……		
	……		
3.9	Have you been in the service of the state for the past twelve months?	YES	NO
	If yes, furnish particulars: ……		
	……		

3.10 Do you have any relationship (family, friend, other) with persons in the service of the state and who may be involved with the evaluation and or adjudication of this bid?	YES	NO
If yes, furnish particulars:		
3.11 Are you, aware of any relationship (family, friend, other) between any other bidder and any persons in the service of the state who may be involved with the evaluation and or adjudication of this bid?	YES	NO
If yes, furnish particulars:		
3.12 Are any of the company's directors, trustees, managers, principle shareholders or stakeholders in service of the state?	YES	NO
If yes, furnish particulars:		
3.13 Are any spouse, child or parent of the company's directors, trustees, managers, principle shareholders or stakeholders in service of the state?	YES	NO
If yes, furnish particulars:		
3.14 Do you or any of the directors, trustees, managers, principle shareholders, or stakeholders of this company have any interest in any other related companies or business whether or not they are bidding for this contract?	YES	NO
If yes, furnish particulars:		

4 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

I, the undersigned, who warrants that they are authorised to sign on behalf of the Tenderer, confirms that the information contained in this form is within my personal knowledge and is to the best of my belief both true and correct.

NAME (Block Capitals): **Date**

SIGNATURE:

T2.2.6 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.

		Circle Applicable	
1.0	Are you by law required to prepare annual financial statements for auditing?	YES	NO
1.1	**If YES, submit audited annual financial statements for the past three years or since the date of establishment if established during the past three years.**		
2.0	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?	YES	NO
2.1	If NO, this serves to certify that the bidder has no undisputed commitments for municipal services towards any municipality for more than three months or other service provider in respect of which payment is overdue for more than 30 days.		
2.2	If YES, provide particulars.		
	……..……..		
	……..……..		
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?	YES	NO
3.1	If YES, provide particulars.		
	……..……..		
	……..……..		
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?	YES	NO
4.1	If YES, provide particulars.		
	……..……..		
	……..……		

If required by 1.1 above, tenderers are to include, at the back of their tender submission document, a printout of their audited annual financial statements.

I, the undersigned, who warrants that they are authorised to sign on behalf of the Tenderer, confirms that the information contained in this form is within my personal knowledge and is to the best of my belief both true and correct, ***and, if required, that the requested documentation has been included in the tender submission****.*

NAME (Block Capitals): ---------- **Date**

SIGNATURE: ---------- ----------

T2.2.7 MBD 6.1: PREFERENCE POINTS CLAIM
In terms of THE PREFERENTIAL PROCUREMENT REGULATIONS (2022)

Reference is to be made to Clause F.3.11 of the Tender Data.

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

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

1.0 GENERAL CONDITIONS

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

- the 80/20 system for requirements with a Rand value of up to R50 000 000 (all applicable taxes included).
- the 90/10 system for requirements with a Rand value above R50 000 000 (all applicable taxes included).

1.2 Either the 80/20 preference point system will be applicable in this tender. The lowest/ highest acceptable tender will be used to determine the applicable system once tenders are received.

1.3 Preference Points for this tender shall be awarded for:

- **Price** and **Specific Goals**: Either 80 or 90 (price) and 20 or 10 (specific goals), in terms of 1.2 above.
- The total Preference Points, for Price and Specific Goals, is 100.

1.4 Failure on the part of the tenderer to submit the required proof or documentation, in terms of the requirements in the Conditions of Tender for claiming specific goal preference points, will be interpreted that preference points for specific goals are not claimed.

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

2.0 DEFINITIONS

2.1 "**tender**" means a written offer in the form determined by an organ of state in response to an invitation to provide goods or services through price quotations, competitive tendering process or any other method envisaged in legislation.

2.2 "**price**" means an amount of money tendered for goods or services, and includes all applicable taxes less all unconditional discounts.

2.3 "**rand value**" means the total estimated value of a contract in Rand, calculated at the time of bid invitation, and includes all applicable taxes.

2.4 "**tender for income-generating contracts**" means a written offer in the form determined by Municipality in response to an invitation for the origination of income-generating contracts through any method envisaged in legislation that will result in a legal agreement between the Municipality and a third party that produces revenue for the Municipality, and includes, but is not limited to, leasing and disposal of assets and concession contracts, excluding direct sales and disposal of assets through public auctions.

2.5 "**the Act**" means the Preferential Procurement Policy Framework Act, 2000 (Act No. 5 of 2000).

3.0 FORMULA FOR CALCULATION OF PREFERENCE PRICE POINTS

3.1 PROCUREMENT OF GOODS AND SERVICES

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

80 / 20 Points System **OR** **90 / 10 Points System**

$$Ps = 80\left(1 - \frac{Pt - Pmin}{Pmin}\right) \qquad Ps = 90\left(1 - \frac{Pt - Pmin}{Pmin}\right)$$

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

4.0 POINTS AWARDED FOR SPECIFIC GOALS

4.1 In terms of Regulation 4(2); 5(2); 6(2) and 7(2) of the Preferential Procurement Regulations, preference points must be awarded for specific goals stated in the tender. For the purposes of this tender the tenderer will be allocated points based on the goal(s) stated in **Table 1** below, as supported by proof/ documentation stated in the **Conditions of Tender**:

4.2 In cases where organs of state intend to use Regulation 3(2) of the Regulations, which states that if it is unclear whether the 80/20 or 90/10 preference point system applies, an organ of state must, in the tender documents, stipulate in the case of:

(a) an invitation for tender for income-generating contracts, that either the 80/20 or 90/10 preference point system will apply and that the highest acceptable tender will be used to determine the applicable preference point system, or
(b) any other invitation for tender, that either the 80/20 or 90/10 preference point system will apply and that the lowest acceptable tender will be used to determine the applicable preference point system,

then the organ of state must indicate the points allocated for specific goals for both the 90/10 and 80/20 preference point system.

TABLE 1: Specific Goals for the tender and maximum points for each goal are indicated per the table below.

Tenderers are to indicate their points claim for each of the Specific Goals in the shaded blocks.

The Specific Goals to be allocated points in terms of this tender	Maximum Number of points ALLOCATED (80/20 system)	Maximum Number of points ALLOCATED (90/10 system)	Number of points CLAIMED (80/20 system)	Number of points CLAIMED (90/10 system)
Ownership Goal: Race (black)	2.5	1.25		
Ownership Goal: Gender (female)	1.5	0.75		
Ownership Goal: Disabilities	1	0.5		
RDP Goal: The Creation of new jobs to address black youth unemployment	4	2		
RDP Goal: The promotion of enterprises located in a specific municipal area.	3	1.5		
RDP Goal: Social upliftment of communities	3	1.5		
RDP Goal: The promotion of SMMEs owned by PPG (contracts >R5m)	5	2.5		
		Total CLAIMED Points		

I, the undersigned, who warrants that they are authorised to sign on behalf of the Tenderer, certify that the points claimed, based on the specific goals as specified in the tender, qualifies the tendering entity for the preference(s) shown.

I acknowledge that:

1) The information furnished is true and correct.

2) The preference points claimed are in accordance with the General Conditions as indicated in paragraph 1 of this form.

3) In the event of a contract being awarded as a result of points claimed as shown in paragraphs 1.4 and 4.2, the contractor may be required to furnish documentary proof to the satisfaction of the organ of state that the claims are correct.

4) If the specific goals have been claimed or obtained on a fraudulent basis, or any of the conditions of contract have not been fulfilled, the organ of state may, in addition to any other remedy it may have:

   (a) disqualify the person from the tendering process.
   (b) recover costs, losses or damages it has incurred or suffered as a result of that person's conduct.
   (c) cancel the contract and claim any damages which it has suffered as a result of having to make less favourable arrangements due to such cancellation.
   (d) recommend that the tenderer or contractor, its shareholders and directors, or only the shareholders and directors who acted on a fraudulent basis, be restricted from obtaining business from any organ of state for a period not exceeding 10 years, after the *audi alteram partem* (hear the other side) rule has been applied; and
   (e) forward the matter for criminal prosecution, if deemed necessary.

NAME (Block Capitals): ---------- **Date**

SIGNATURE: ---------- ----------

T2.2.8 MBD 8: DECLARATION OF BIDDER'S PAST SUPPLY CHAIN MANAGEMENT PRACTICES

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

2.0 It serves as a declaration to be used by municipalities and municipal entities in ensuring that when goods and services are being procured, all reasonable steps are taken to combat the abuse of the supply chain management system.

3.0 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.
d) been listed in the Register for Tender Defaulters in terms of section 29 of the Prevention and Combating of Corrupt Activities Act (No 12 of 2004).

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

		Circle Applicable	
4.1	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

4.1.1 If YES, provide particulars.

.....

.....

4.2	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.	YES	NO

4.2.1 If YES, provide particulars.

.....

.....

4.3	Was the bidder or any of its directors convicted by a court of law (including a court of law outside the Republic of South Africa) for fraud or corruption during the past five years?	YES	NO

4.3.1 If YES, provide particulars.

.....

.....

4.4	Does the bidder or any of its directors owe any municipal rates and taxes or municipal charges to the municipality / municipal entity, or to any other municipality / municipal entity, that is in arrears for more than three months?	YES	NO

4.4.1 If YES, provide particulars.

.....

.....

4.5	Was any contract between the bidder and the municipality / municipal entity or any other organ of state terminated during the past five years on account of failure to perform on or comply with the contract?	YES	NO

4.5.1 If YES, provide particulars.

.....

.....

I, the undersigned, who warrants that they are authorised to sign on behalf of the Tenderer, confirms that the information contained in this form is within my personal knowledge and is to the best of my belief both true and correct.

I accept that, in addition to cancellation of a contract, action may be taken against me should this declaration prove to be false.

NAME (Block Capitals): **Date**

SIGNATURE:

T2.2.9 MBD 9: CERTIFICATE OF INDEPENDENT BID DETERMINATION

NOTES

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

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

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

1.0 This Municipal Bidding Document (MBD) must form part of all **bids**[1] invited.

2.0 Section 4 (1) (b) (iii) of the Competition Act No. 89 of 1998, as amended, prohibits an agreement between, or concerted practice by, firms, or a decision by an association of firms, if it is between parties in a horizontal relationship and if it involves collusive bidding (or **bid rigging**).[2] Collusive bidding is a *pe se* prohibition meaning that it cannot be justified under any grounds.

3.0 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.

4.0 This MBD serves as a certificate of declaration that would be used by institutions to ensure that, when bids are considered, reasonable steps are taken to prevent any form of **bid rigging**.

5.0 In order to give effect to the above, the attached Certificate of Bid Determination (MBD 9) must be completed and submitted with the bid.

CERTIFICATE OF INDEPENDENT BID DETERMINATION

I, the undersigned, in submitting the accompanying bid:

- -

(Bid Number and Description)

in response to the invitation for the bid made by:

- -

(Name of Municipality / Municipal Entity)

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

I certify, on behalf of:

- -

(Name of Bidder)

that:

1. I have read and I understand the contents of this Certificate.

2. I understand that the accompanying bid will be disqualified if this Certificate is found not to be true and complete in every respect.

3. I am authorized by the bidder to sign this Certificate, and to submit the accompanying bid, on behalf of the bidder;

4. Each person whose signature appears on the accompanying bid has been authorized by the bidder to determine the terms of, and to sign, the bid, on behalf of the bidder;

5. For the purposes of this Certificate and the accompanying bid, I understand that the word “competitor” shall include any individual or organization, other than the bidder, whether or not affiliated with the bidder, who:
   (a) has been requested to submit a bid in response to this bid invitation.
   (b) could potentially submit a bid in response to this bid invitation, based on their qualifications, abilities or experience.
   (c) provides the same goods and services as the bidder and/or is in the same line of business as the bidder.

6. The bidder has arrived at the accompanying bid independently from, and without consultation, communication, agreement, or arrangement with any competitor. However, communication between partners in a joint venture or consortium[3] will not be construed as collusive bidding.

7. In particular, without limiting the generality of paragraphs 6 above, there has been no consultation, communication, agreement or arrangement with any competitor regarding:
   (a) prices.
   (b) geographical area where product or service will be rendered (market allocation).
   (c) methods, factors or formulas used to calculate prices.
   (d) the intention or decision to submit or not to submit, a bid.
   (e) the submission of a bid which does not meet the specifications and conditions of the bid.
   (f) bidding with the intention not to win the bid.

8. In addition, there have been no consultations, communications, agreements, or arrangements with any competitor regarding the quality, quantity, specifications and conditions or delivery particulars of the products or services to which this bid invitation relates.

9. The terms of the accompanying bid have not been, and will not be, disclosed by the bidder, directly or indirectly, to any competitor, prior to the date and time of the official bid opening or of the awarding of the contract.

10. I am aware that, in addition and without prejudice to any other remedy provided to combat any restrictive practices related to bids and contracts, bids that are suspicious will be reported to the Competition Commission for investigation and possible imposition of administrative penalties in terms of section 59 of the Competition Act No 89 of 1998 and or may be reported to the National Prosecuting Authority (NPA) for criminal investigation and or may be restricted from conducting business with the public sector for a period not exceeding ten (10) years in terms of the Prevention and Combating of Corrupt Activities Act No 12 of 2004 or any other applicable legislation.

NAME (Block Capitals): ---------- **Date**

SIGNATURE: ---------- ----------

T2.2.10 JOINT VENTURES AGREEMENTS

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

T2.2.11 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		

I, the undersigned, who warrants that they are authorised to sign on behalf of the Tenderer, confirms that the information contained in this form is within my personal knowledge and is to the best of my belief both true and correct.

It is also confirmed that the requirements, as stated on the Addenda, have been complied with.

NAME (Block Capitals): ---------- **Date**

SIGNATURE: ---------- ----------

T2.2.12 ELIGIBILITY: DECLARATION OF MUNICIPAL FEES

Reference is to be made to Clause F.2.1(f)(ii) of the Tender Data.

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												
Electricity												
Water												
Rates												
JSB Levies												
Other												

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.

- Where the tenderer's place of business or business interests are outside the jurisdiction of eThekwini municipality, a copy of the accounts/ agreements from the relevant municipality are to be provided.
- Where the tenderer's Municipal Accounts are part of their lease agreement, then a copy of the agreement, or an official letter to that effect, is to be provided.

Tenderers are to include, at the back of their tender submission document, a printout of the above account's and or agreements signed with the municipality.

Failure to include the required document will make the tender submission non-responsive.

*I, the undersigned, who warrants that they are authorised to sign on behalf of the Tenderer, confirms that the information contained in this form is within my personal knowledge and is to the best of my belief both true and correct, **and that the requested documentation has been included in the tender submission**.*

NAME (Block Capitals): **Date**

SIGNATURE:

T2.2.13 ELIGIBILITY: REGISTRATION WITH COMPENSATION COMMISSIONER

Reference is to be made to Clause F.2.1(f)(i) of the Tender Data.

The Occupational Injuries and Diseases Act (130 of 1993 as amended) (the Act) refers. A summary of the pertinent Clauses are listed below. The act is to be referenced for the full text of the clauses.

Clause 80: Employer to register with commissioner and furnish him with particulars
The Act requires that an Employer carrying out business in the Republic to register with the Compensation Commissioner. Any person who fails to comply with the provisions of the this clause is guilty of an offence.

Clause 82: Employer to furnish returns of earnings
The Act requires an Employer to furnish the commissioner with a return showing:

- The amount of earnings paid by him to his employees.
- Any further information as may be prescribed or as the commissioner may require.

Any Employer who fails to comply with the provisions of the this clause is guilty of an offence.

Clause 86: Assessment to be paid by an employer to commissioner
The Act states that an Employer will receive notices of assessment from the commissioner. The Employer must pay the commissioner the assessment amount on the notices.

Clause 89: Mandators and contractors
The Act requires a contractor (a person with a contract with a mandator) to register as an Employer in accordance with the provisions of the Act and pay the necessary assessments. Failing registration or payment of assessments, the mandator is required to pay the assessments in respect of the employees of the contractor. The mandator is allowed to recover the assessment amounts paid from the contractor.

The Department of labour issues contractors with a **Letter of Good Standing** if the contractor has complied with the requirement(s) of the Act and is in "good standing" with the Compensation Fund. Employers can check the validity of such Letters of Good Standing on the internet (https://cfonline.labour.gov.za/VerifyLOGS).

Tenderers are to include, at the back of their tender submission document, a printout of their most recent Letter of Good Standing from the Department of Labour.

Failure to include the required document will make the tender submission non-responsive.

I, the undersigned, who warrants that they are authorised to sign on behalf of the Tenderer, confirms that the information contained in this form is within my personal knowledge and is to the best of my belief both true and correct, ***and that the requested documentation has been included in the tender submission****.*

NAME (Block Capitals): ..... **Date** .....

SIGNATURE: .....

T2.2.14 ELIGIBILITY: CSD REGISTRATION REPORT

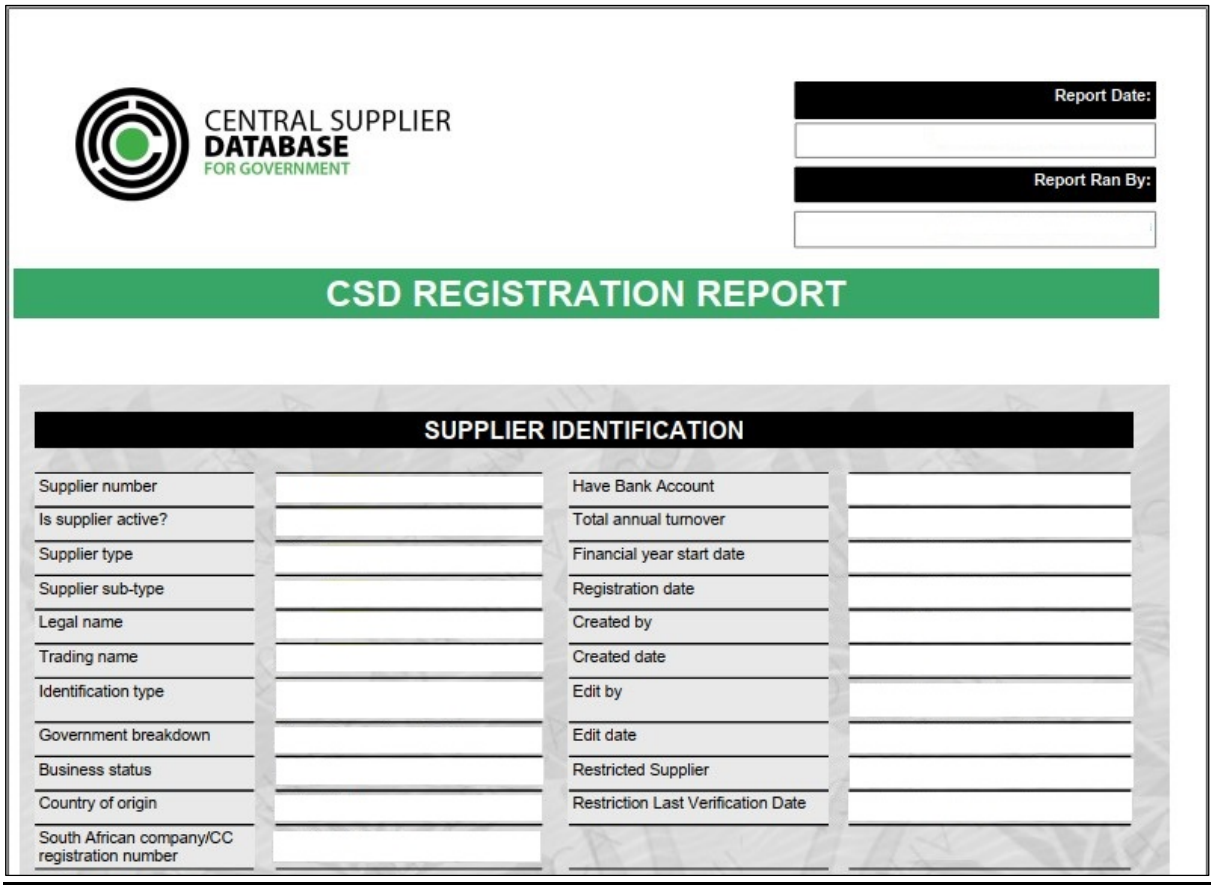
Reference is to be made to Clauses F.2.1(e) and F.2.23 of the Tender Data.

The Conditions of Tender, Clause F.2.1: 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.

CSD Registration Reports can be obtained from the National Treasury's CSD website at 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		Have Bank Account	
Is supplier active?		Total annual turnover	
Supplier type		Financial year start date	
Supplier sub-type		Registration date	
Legal name		Created by	
Trading name		Created date	
Identification type		Edit by	
Government breakdown		Edit date	
Business status		Restricted Supplier	
Country of origin		Restriction Last Verification Date	
South African company/CC registration number			

Tenderers are to include, at the back of their tender submission document, a printout of their (full) CSD Registration Report.

*I, the undersigned, who warrants that they are authorised to sign on behalf of the Tenderer, confirms that the information contained in this form is within my personal knowledge and is to the best of my belief both true and correct, **and that the requested documentation has been included in the tender submission**.*

NAME (Block Capitals): ---------- **Date**

SIGNATURE: ---------- ----------

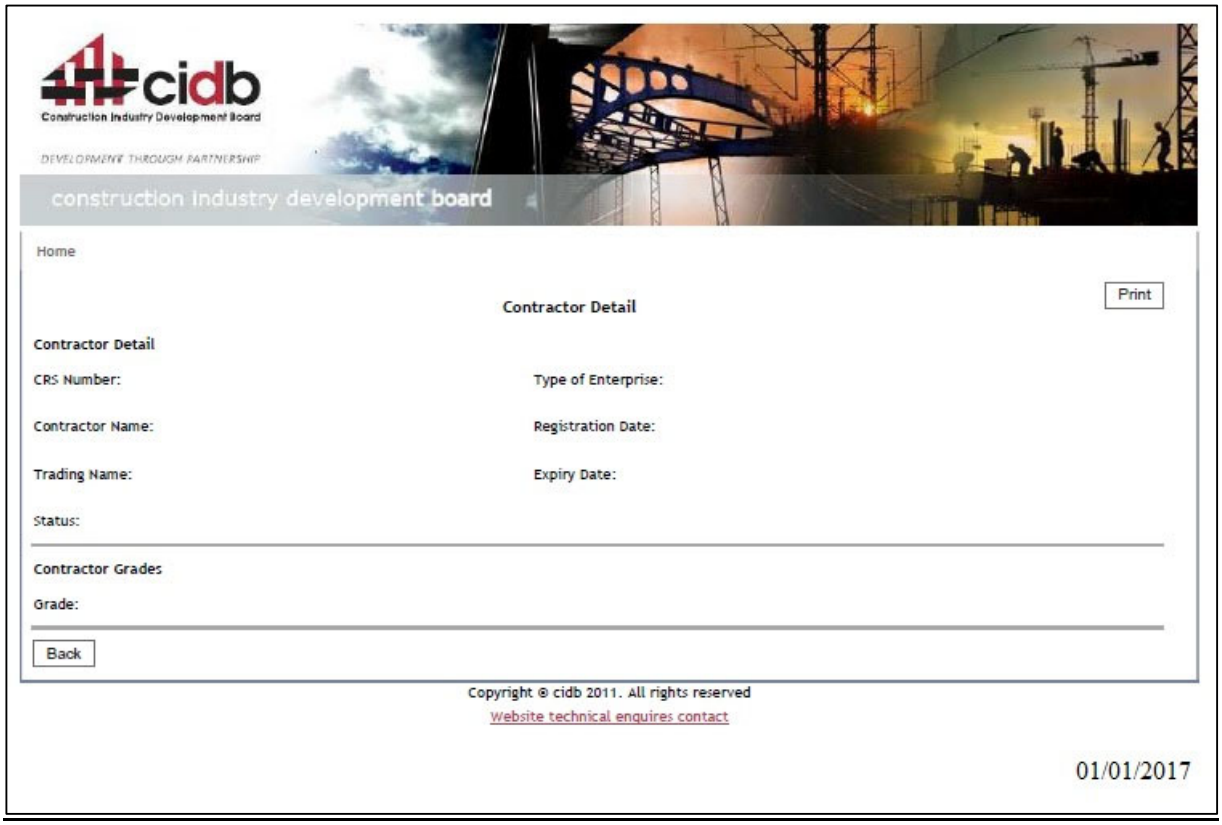
T2.2.15 ELIGIBILITY: VERIFICATION OF CIDB REGISTRATION AND STATUS

Reference is to be made to Clause F.2.1.1 and F.2.23 of the Tender Data.

The Conditions of Tender, **Clause F.2.1.1: 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. The required class of construction work is specified in Clause F.2.1.1.

CIDB Registrations can be obtained from the CIDB website at 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 the beginning of the printout obtained from the above website.



Tenderers are to include, at the back of their tender submission document, a printout of their registration with the CIDB.

*I, the undersigned, who warrants that they are authorised to sign on behalf of the Tenderer, confirms that the information contained in this form is within my personal knowledge and is to the best of my belief both true and correct, **and that the requested documentation has been included in the tender submission**.*

NAME (Block Capitals): ---------- **Date**

SIGNATURE: ---------- ----------.

T2.2.16 <u>EXPERIENCE OF TENDERER</u>

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

The following is a statement of works <u>of similar nature</u> (in relation to the scope of works) recently (within the past 7 years) executed by myself / ourselves.

Tenderers are to submit copies of signed completion certificates for all projects submitted.

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

Attach additional pages if more space is required

I, the undersigned, who warrants that they are authorised to sign on behalf of the Tenderer, confirms that the information contained in this form is within my personal knowledge and is to the best of my belief both true and correct.

NAME (Block Capitals): -- **Date**

SIGNATURE: -- ------------------------

T2.2.17 PROPOSED ORGANISATION and STAFFING

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

The tenderer should propose the structure and composition of their team i.e. the main disciplines involved, the key staff member / expert responsible for each discipline, and the proposed technical and support staff and site staff.

The roles and responsibilities of each key staff member / expert should be set out as job descriptions. In the case of an association / joint venture / consortium, it should, indicate how the duties and responsibilities are to be shared.

The tenderer must attach his / her organization and staffing proposals to this page. (this is to include both the on-site and off-site staffing resources used for this project)

In addition to any lists, this information should also be shown in an organogram format (flow chart) clearly indicating the staff hierarchy and reporting lines, again for on- and off-site resources.

The undersigned, who warrants that he / she is duly authorised to do so on behalf of the enterprise, confirms that the contents of this schedule are within my personal knowledge and are to the best of my belief both true and correct.

I, the undersigned, who warrants that they are authorised to sign on behalf of the Tenderer, confirms that the information contained in this form is within my personal knowledge and is to the best of my belief both true and correct.

NAME (Block Capitals): ---------- **Date**

SIGNATURE: ---------- ----------

T2.2.18 KEY PERSONNEL

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

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
Site Agent, Project Managers		
Foremen, Quality Control and Safety Personnel		
Technicians, Surveyors, etc		
Artisans and other Skilled workers		
Plant Operators		
Unskilled Workers		
Others:		
.....		

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

I, the undersigned, who warrants that they are authorised to sign on behalf of the Tenderer, confirms that the information contained in this form is within my personal knowledge and is to the best of my belief both true and correct.

NAME (Block Capitals): ..... **Date**

SIGNATURE: ....

T2.2.19 EXPERIENCE OF KEY PERSONNEL

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

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

I, the undersigned, who warrants that they are authorised to sign on behalf of the Tenderer, confirms that the information contained in this form is within my personal knowledge and is to the best of my belief both true and correct.

NAME (Block Capitals): **Date**

SIGNATURE:

T2.2.20 PRELIMINARY PROGRAMME

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

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

PROGRAMME														
ACTIVITY	**WEEKS / MONTHS**													

Note: The programme must be based on the completion time as specified in the Contract Data.

I, the undersigned, who warrants that they are authorised to sign on behalf of the Tenderer, confirms that the information contained in this form is within my personal knowledge and is to the best of my belief both true and correct.

NAME (Block Capitals): **Date**

SIGNATURE:

T2.2.21 CONSTRUCTION APPROACH, METHODOLOGY, AND QUALITY CONTROL

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

Construction Approach and Methodology

The construction approach and methodology must respond to the Scope of Work and outline the proposed approach to undertake the work showing a detailed programme including health and safety aspects, the use of plant and resources for this Project.

Quality Control

The quality control statement must discuss what tests and control measures are to be employed on site to attain the specified results and is to cover the program associated activities.

The tenderer must attach his / her Construction Methodology and Quality Control information to this page.

I, the undersigned, who warrants that they are authorised to sign on behalf of the Tenderer, confirms that the information contained in this form is within my personal knowledge and is to the best of my belief both true and correct.

NAME (Block Capitals): ---------- **Date**

SIGNATURE: ---------- ----------

T2.2.22 SCHEDULE OF PROPOSED SUBCONTRACTORS

The following firms have been identified as possible subcontractors for work in this contract.

NAMES AND ADDRESSES OF PROPOSED SUBCONTRACTORS	NATURE AND EXTENT OF WORK TO BE SUBCONTRACTED	PREVIOUS EXPERIENCE WITH SUBCONTRACTOR

Attach additional pages if more space is required

I, the undersigned, who warrants that they are authorised to sign on behalf of the Tenderer, confirms that the information contained in this form is within my personal knowledge and is to the best of my belief both true and correct.

NAME (Block Capitals): ---------- **Date**

SIGNATURE: ---------- ----------

T2.2.23 PLANT and EQUIPMENT

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

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.

I, the undersigned, who warrants that they are authorised to sign on behalf of the Tenderer, confirms that the information contained in this form is within my personal knowledge and is to the best of my belief both true and correct.

NAME (Block Capitals): ---------- **Date**

SIGNATURE: ---------- ----------

T2.2.24 CONTRACTOR'S HEALTH AND SAFETY PLAN

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

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 C.3: Project Specification. A generic plan will not be acceptable.

I, the undersigned, who warrants that they are authorised to sign on behalf of the Tenderer, confirms that the information contained in this form is within my personal knowledge and is to the best of my belief both true and correct.

NAME (Block Capitals): ---------- **Date**

SIGNATURE: ---------- ----------

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: **1T-48646**

Contract Title: **Widening of carriageway on Corridor C3 BRT Route at Erf 77 Pineside Road on Qashana Khuzwayo Road, Pinetown, Wards 18 and 21.**

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 *(in capitals)*	……
……	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 **12 Months**. The period as stated in 5.3.2, and the 7 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 eThekwini Municipality as represented by:
Deputy Head: **Road Systems Management**

1.2.1.2 The address of the Employer is:
Physical: eThekwini Transport Authority, 30 Archie Gumede Place, Durban, 4001
Postal: eThekwini Transport Authority, P O Box 680, Durban, 4000
Telephone: 031-322-8651 (t)
Fax:
E-Mail: Bethuel.manthoadi@durban.gov.za

1.1.1.16 The **name of the Employer's Agent** is Bethuel Manthoadi
1.2.1.2 The address of the Employer' Agent is:
Physical: eThekwini Transport Authority, 30 Archie Gumede, Durban, 4001
Postal: Ethekwini Transport Authority, P O Box 680, Durban, 4000
Telephone: 031-322-8651 (t)
Fax:
E-Mail: Bethuel.Manthoadi@durban.gov.za

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

3.2.3 The Employer's Agent Representative 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:

- 6.3: Council approval in order to authorise any expenditure in excess of the Tender Sum.
- He shall obtain approval to certify each rain day.

4.11.1 To carry out and complete the works, the Contractor shall employ a competent Site Agent and Foreman as part of the key staff. It is a requirement for the Contractor's Site Agent and Foreman to each have a minimum of 3 years relevant experience including experience on projects of a similar nature. The CV's of the Site Agent and the Foreman should be submitted to the Employer's Agent's Representative for acceptance by the Department (reference is made to Cl.5.3.1 of the Contract Data).

Note:

i) "similar nature" implies projects that were of a value of at least 70% of this tender's value, and had a comparable Scope of Work in terms of technical requirements and operations.

ii) "experience" implies experience on projects of a similar nature.

iii) "accredited degree / diploma" implies a minimum 3-year qualification within the built environment, from a registered University or Institute of Technology.

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)
- CPG Implementation Plan
- Youth Employment Plan
- In-Service/New Graduate Employment Plan
- Candidate Professional Development Plan
- Legacy Project(s) Implementation Plan
- Infrastructure Repair and/or Maintenance Plan

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.

Month	Days Lost	Average Rainfall	Month	Days Lost	Average Rainfall
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/Annum		* = 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 90% of the average daily P & G amount claimed during the preceding 90 day period leading to the first day of the delay 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 50%**

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: **R 100 000-00**.

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 3 000 000-00**.
- Maximum first excess: **R 50 000-00**.

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 5 000 000-00**.
- Consequential loss to be covered by policy: **Yes**
- Liability section of policy to be extended to cover blasting: **R 3 000 000-00**.
- Maximum excess per claim or series of claims arising out of any one occurrence: **R50 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: **R3 000 000-00**.
- Maximum first excess: **R 50 000-00**.

Insurance of Works

- Minimum amount for additional removal of debris (no damage): **R 1 000 000-00**.
- Minimum amount for temporary storage of materials off site, excluding Contractor's own premises: **R 1 000 000-00**.
- Minimum amount for transit of materials to site: **R 1 000 000-00**.

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."

10.5.1 **Dispute resolution** shall be by Ad-hoc adjudication.

10.5.3 The **number of members** of the Adjudication Board to be appointed: 3.

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:

……

……

……

……

The Postal address of the Contractor is:

……

……

……

……

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 CLO will be reimbursed from the PC Sum item in the Preliminary & General Section of the Bill of Quantities.

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 eThekwini Council Policy “The use of CLOs and Local Labour”. The contractor will be required to ensure that a minimum of 100% 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 Ward 18 and 21.** 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 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)
- ID Number
- 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.

C1.2.3.4 PERFORMANCE MONITORING OF SERVICE PROVIDERS

[For contract awards over R10m] The Contractor shall be subjected to "Performance Monitoring" assessments in terms of the applicable Section (S.53) of the Employer's Supply Chain Management Policy.

Key Performance Indicators (KPIs) are specified below;

Indicator	Description and targets
On-time monthly payment certificate submission	Final verified payment certificate submitted by the 20th monthly
On-time monthly programme submission	Revised/updated programme submitted for approval by the 20th monthly
On-time monthly progress report submission	Progress report submitted by the 22nd monthly

Indicator	Description and targets
Cashflow plan performance	Actual cashflow deviation to be limited to -5% and +10% of plan for the month
Schedule plan performance	Delays to the critical path to be limited to 1% of original project duration per quarter
Risk management plan performance	- 100% emerging risks captured in the risk register within 7 days of identification - 100% of all "high" risk rating risk treatment actions executed by due date. - 95% of all "medium" risk rating risk treatment actions executed by due date. - 90% of all "low" risk rating risk treatment actions executed by due date.
Quality Control plan performance	- 100% of all planned quality control tests successfully executed - Minimum 97.5% success rate on all planned quality control tests per quarter - No requests for concession(s) on quality of materials and workmanship

C1.2.3.5 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.

C1.2.3.6 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 **>51% PPG** (Priority Population Group) owned. Proof of payment to the subcontractors will be required to verify that the minimum has been achieved.

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

C1.2.3.7 Ownership Goals & RDP Goals

The Contractor is to discharge all commitments, towards the Employer's Ownership Goals and RDP goals, as Preference Points Claim table (and supporting information/documents) in part T2 of this tender document and (where applicable) detailed in the goal specific implementation plans required by 5.3.1 of this document.
Details of the scope of works and (where applicable) specification(s) for the development and execution of these goal specific plans are contained in C3.1 and C3.2 respectively.

Failure to meet and/or demonstrate that these commitments have been met by the Contractor will attract a penalty (P_n), the value of which shall under no circumstances be less than that calculated as per the formula below:

P_1 = %weight of specific goal x %specific goal short-fall x contract sum (incl. PC sums, PR sums and excl. Fixed Costs)

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P_n = %weight of specific goal x %specific goal short-fall x contract sum (incl. PC sums, PR sums and excl. Fixed Costs)

The total value of the penalty (P_t) shall be the sum of the penalties per individual goals;

$P_t = P_1 + P_2 + \ldots + P_n$

C1.2.3.8 Timeous Setting Out of the Works

I. The Contractor sets out/stakes out all the areas where the contract is planned to tie-in to existing infrastructure and/or networks and submits a report to the Project Manager within four (4) weeks of the date of issue of the Site Access Certificate(s).
II. The Contractor sets out/stakes out the entirety of each planned sequence of works and submits a report to the Project Manager at least four (4) weeks before the planned start date of construction on the specific construction sequence.

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 20 pages. The pages are numbered 1 to 20

PART C3: SCOPE OF WORK

C3.1: PROJECT DESCRIPTION AND SCOPE OF CONTRACT

C3.1.1 Project Background

The eThekwini Municipality is in the process of restructuring Public Transport (PT) within the City in order to ensure that a sustainable, safe and efficient service is delivered. The overall goal of this initiative is to improve the quality of life for the city's residents through the establishment of an Integrated Public Transport Network (IPTN). This public transport service in the City will ultimately be in line with Government's PT Action Agenda as approved by Cabinet in 2008 where all the major cities have been mandated to create and implement fully integrated public transport networks over the next 15 years.

The eThekwini Municipality has completed a comprehensive plan for the project. The planning yielded a public transport system with special features that are currently not available in the public transport system. The network will comprise an integrated package of rail and rapid bus trunk routes with dedicated Right of Ways (ROW), feeder and complimentary services for public transport. The system will be universally accessible.

The IPTN has 9 corridors that would make up the proposed public transport network. In the first phase of the IPTN, 3 Corridors have been designed and being implemented, that three Corridors being the C1, C3 and C9.

The above-mentioned Corridors originate at the Bridge City terminal and terminate at the City Centre, Pinetown Centre, and Umhlanga Rocks Town Centre, respectively.

The C3 Corridor has been divided into several work packages with the Crossroads link being the only outstanding connection to complete the construction of this Corridor.

This particular work package, contract 1T-48646 is a continuation or a completion of works that were started under a different contract, contract 1T-12939, which started the BRT related works along a section that start at the intersection of Josiah Gumede Road and Beviss Road in Pinetown and traversing to the intersection of Qashana Khuzwayo Road and Dinkelman Road in New Germany.

A section of the original contract, between Cherry Road and Crompton Road was not completed with respect to road widening and related works, and this new contract (1T-48646) therefore seeks to complete the remaining works.

C3.1.2 Description of Site and Access

The location of the site is within a built environment in New Germany, west of Durban. The GPS co-ordinates are -29.804861, 30.871533. The proposed construction is situated along the trafficked Qashana Khuzwayo Road between the intersections of Henwood Road and Crompton Road. The site is easily accessible from both ends of the construction site (see image below).

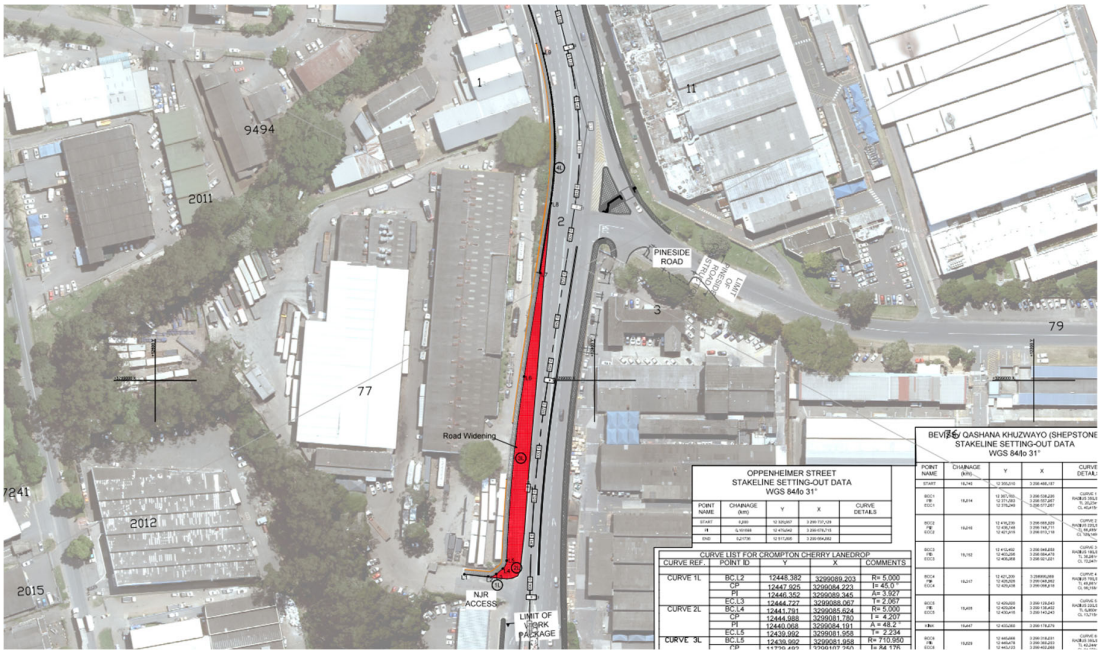

Figure 1: Proposed Works in Red

C3.1.3 Nature of Ground and Subsoil Conditions

Ground conditions are provided on the accompanying detailed geotechnical report entitled "*ETHEKWINI IRPTN Geotechnical Investigation Report"* reference number 6396/13760, dated, 12 February 2014.

C3.1.4 Project Scope

The scope includes the following works:

- Bulk earthworks;
- Roadworks
- Pedestrian Facilities-sidewalks;
- Concrete kerbs that will separate the Right of Way (ROW) and the Mixed Use (MU) lanes;
- Reinforced concrete retaining walls;
- Reinstatement of the NJR entrance;
- Stormwater drainage system;
- Installation of service ducts;
- Landscaping;
- Protection Works;
- Street lights;
- Traffic Accommodation;

Road Works (Road Widening)

The widening is approximately 1500m2 (hatched in red). The widening works will comprise the addition of a new lane on the western side of the carriageway as well as a sidewalk. The new road earthworks will be supported against **"Wall G"** and **"Wall E"** at NJR access. The completed carriageway will have two lanes of Mixed-Use lanes in either direction that will taper down to one lane in each direction, and the other two lanes will be dedicated to the BRT service (Right-of-Way lanes) and will be located at the centre of the carriageway.

In addition to the proposed widening, there will be kerbing, road markings and minor works for a total length of 400m between chainages 19+020 and 19+420. See Layout Drawing No. **(01) 1T-48646 Layout Plan**. Separator kerbs will be installed between the mixed-use carriageways and the RoW lanes to ensure the exclusive use of the RoW lanes by the BRT service buses during operation. Kerbing and channelling have been allowed for on the eastern edge of the road works as well as all necessary stormwater management works and underground services underneath the sidewalk.

Pavement Layerworks for Roadworks

The following are the pavement designs for the applicable sections, see Typical Sections drawing number: **(06) 1T-48646 Typical Details**.

Wearing Course: 50mm SaV14 (Mix design level II A)

Base Course Layer: 120mm EME14

Subbase Layer: 125mm C3 Subbase

Selected Layer: 300mm G7 SSG

Subgrade: G9 Compacted to 97% MOD AASHTO

Traffic Accommodation

The Contractor will need to design a traffic accommodation plan which will need to be submitted to the City's Traffic Operations Department within the ETA for acceptance.

Concrete Retaining Wall (Wall G)

A reinforced concrete retaining wall must be built along the side of the newly widened road to retain it. A part of this wall, known as Wall G, was built on a previous contract and this contract will complete the remaining ±140m, between chainage 19+140 and 19+280, the wall is about 4m high at the highest point. See drawing number **73871.550 Wall G - Long Section** to **73871.560 Wall G - Wall Reinforcement Details 6.** The drawings include a front elevation, a coordinated plan, cross sections, concrete as well as steel reinforcement details.

Concrete Retaining Wall (Wall E)

A reinforced concrete retaining wall E must be constructed along the entrance of NJR to retain earthworks. The total length of the wall is approximately ±110m and is about 3m high at the highest point. See drawing number **73871.535 Wall E - Long Section, Plan View, and Setting Out Line** and **73871.536 Wall E - Reinforcement, Brickwork and Drainage Details**. The drawings include a front elevation, cross sections, concrete as well as steel reinforcement details.

Services

The Contractor is being made aware that there are existing services within the construction zone, which were identified on BaseMap Arc GIS and depicted in drawing number **(05) 1T-48646 Services Layout**, however, the Contractor is still responsible for the identification and proving of services that may exist on site. The following services are known.

a) Telkom / Neotel
b) ICT Metro Connect Fibre
c) Medium Voltage Cables
d) Low Voltage Cables
e) Stormwater
f) Streetlights

Stormwater

Stormwater drainage facilities will be constructed under this contract. This includes for the construction of a closed subsurface drainage system consisting of concrete pipes as per approved drawings. This network will need to tie into the existing drainage facilities.

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 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. Some of the more important of these are:

(1) Relocation of Services: The notice period required for the relocation of services is 60 days from date of proving and providing of notice for relocations in the first sequence of work and 90 days in the subsequent sequences.

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, the Engineer may direct and instruct the proving of services on site.

(2) All pavement designs to be done and submitted at-least one month before the trial section is laid.

(3) 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, allowance has been made in the Bill of Quantities for the proving of services where directed by the Engineer.

(4) Traffic restrictions as the project is located in a built-up area. Due to the area of works being situated in a high volume and high-speed trafficked area, as well as a high volume of pedestrians, every emphasis should be placed on accommodation and regulating these aspects. The contractor is to make sure that his provisions within the contract will allow him to adequately carry out these functions successfully.

(5) Due consideration shall be given to the timing of the setting out of tie-ins into existing as well as the timeous setting out of each construction/installation sequence as stipulated in the applicable additional condition of contract of this contract, any delays resulting setting out queries/RFIs raised late shall be to the Contractor's account.

(6) Allow a period of 2 months from the inception meeting date for the setting up of the Business Desk/Steering Committee.

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

The conditions on and near this site warrant for the Contractor shall nominate a **suitably qualified** 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.1.4 Penalties for Non-Compliance of Traffic Accommodation Clauses

For every road and traffic rule violation by the Contractor and his Sub-Contractor's, Suppliers and labourers (including local labour), he shall be charged a penalty for that offence. The engineer will raise the charge.

A fixed cost of R1000/event shall be applicable for every event of non-compliance.

A Time related cost of R1000/hour shall be applicable for delay caused by the above-mentioned non-compliance. The measurement of time shall be from when the Level of Service in vehicular capacity has reduced due to the act of non-compliance to the time that the Level of Service is restored to before the incident had occurred.

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. The notice period required for the relocation of services is 60 calendar days from date of proving and providing of notice.

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.

The Contractor shall make himself acquainted with the position of all existing services before any excavation or other work likely to affect the existing services is commenced.

The Contractor will comply with the conditions for dealing with existing services as attached in C3.4, Particular Specifications, and approach the relevant authorities for additional information where applicable.

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 eThekwini 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 eThekwini 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 eThekwini Electricity shall be contacted immediately on the above telephone numbers.

Proving of services shall be completed at least 60 days in advance, for services in the first sequence and 90 days in advance, for services in the subsequent sequences of the actual programmed date. 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.4: Watermains;
- PS.5: Sewers;
- PS.6: Stormwater;
- PS.7: Electrical Cables / Lighting;
- PS.8: Telkom / Neotel;
- PS.9: 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 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

The contractor shall prove the position of water lines and ensure they are not damaged during construction. The proving of these water lines shall be included in the tenderer's rates.

There is a known watermain traversing between Pineside Rd and Crompton Str. along the eastern edge of the road represented by the **blue** lines on the services GIS image provided.

All known services have been shown on the GIS image provided, however, should any unknown water-mains be discovered the Contractor shall be responsible for ensuring that water-mains are not damaged during construction and if a need to relocate or modify, the Contractor shall notify eThekwini Municipality.
Any relocations will be carried out by a Contractor/sub-contractor that will be approved by Metro Water, while the connection to the existing main will be done by Metro Water. Civil works will be carried out by the Main contractor.

It is anticipated that the period required under PS.2.2 will allow sufficient time for these relocations. All relocations and tie-ins to be done by Metro Water.

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.

Cover and Frame Levels

The difference in level between the frame and the finished paved surface level adjacent to the frame shall not exceed: -

- 2mm in a roadway
- 3mm in a footway

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

Tenderer's attention is drawn to the fact that there are known existing sewer lines within the site represented by the **brown** lines of the services GIS image provided. The Contractor shall be responsible for ensuring that sewer pipes are not damaged during construction and if a need to relocate or modify sewer pipes/manholes is identified, the Contractor shall notify eThekwini Municipality.

The relocation of any sewer lines required shall be as per the eThekwini Sanitation Department Specifications.

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

Tenderer's attention is drawn to the fact that the existing stormwater drainage systems will be affected. The Contractor shall be responsible for managing the stormwater runoff generated effectively in sections where the existing lines are to be demolished prior to the commissioning of the proposed drainage system. The existing system is represented by the **green** lines on the GIS image containing services.

Stormwater drainage will be in the form of minor and major works.
The minor works will comprise of the following:

- Construction of stormwater drainage network which includes concrete pipes of varying sizes,
- Subsurface drainage systems in the form of subsoil drains, either conventional sub-soils or the Flo-drain system,
- Inlets and manholes of varying types and configurations,
- Surface drainage systems in the form of concrete or natural channels of varying configurations which will be specified on the drawings,
- Headwalls,
- Management of stormwater runoff and erosion control in the form of reno-mattresses and gabion boxes.

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

See the **red** lines on the GIS maps which represent the existing electrical services, the Contractor has a responsibility to ensure there is no damage.

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 eThekwini 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 eThekwini 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 eThekwini Electricity or their agents. It is a requirement that the street lighting be operational at all times.

PS.6.3 MV / LV Cables

Certain MV / LV cables are to be lowered/replaced within the contract area. The actual cable work associated with this relocation and / or replacement of these cables will be carried out by eThekwini Electricity, and it is stressed that the period referred to in Clause PS.2.2 is the minimum period required to enable eThekwini 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 TELECOM SERVICES (TELKOM, NEOTEL, DFA, METRO CONNECT, LINK AFRICA.)

The tenderers attention is drawn to the fact that Telecom copper cables and fibre optic cables are existing in the contract area. The Contractor shall notify the Engineer and service providers as per clause PS.2.2 to allow sufficient time for these relocations. See telecoms services map.

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 are existing in the contract area.

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:

Describe issues relating to OH&S and the Regulations

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).

Appropriate key performance indicators (KPIs) for the contract has been set by the Municipality as a

yardstick for measuring performance.

C3.3: STANDARD SPECIFICATIONS

C3.3.1 The Specifications on which this contract is based are the eThekiwini 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
B	Site Clearance	March	1990
C	Concrete Work	February	1987
DA	Earthworks: Bulk	January	1985
DB	Earthworks for Pipe Trenches	July	1992
DC	Earthworks for Concrete Lined Canals		
DD	Earthworks for Structures		
EA	Lime Stabilisation		
EB	Graded Crushed Stone	December	1988
EC	Cement Treated Graded Crushed Stone	December	1988
ED	Road Asphalt	July	1992
EE	Pre-coated Stone Chippings		
EF	Kerbs and Haunches	July	1992
EG	Sidewalks, Footpaths and Median Areas	July	1992
EH	Steel Guardrails & Conc. Median Barriers		
EJ	Concrete Interlocking Block Surfaces		
EK	Waterbound Macadam Base		
EL	Dumprock Subgrade Improvement		
EM	Concrete Surface to Roads		
EN	Slurry Sealing		
EP	Single Seal Surface Treatment		
F	Protection Works	July	1992
G	Pre-stressing		
H	Reinforced Earth		
J	Piling		
K	Bearings		
L	Structural Work		
PB	Pavement Layers of Gravel Material		
PC	Stabilisation of Gravel Base		
PD	Surface Treatment: Modified Binder		
PE	Pressure Pipelines: Steel		
PF	Pressure Pipelines: Other Than Steel		
PG	Non Pressure Pipelines and Pc Culverts	July	1992
PH	Manholes and Appurtenant Drainage Works	July	1992
PJ	Pipe Jacking		
PG	Lateral Support Systems		
PS	Pump Stations: Sewage		
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 DC	Earthworks for Concrete Lined Canals
PS DD	Earthworks for Structures
PS EA	Lime Stabilisation
PS EB	Graded Crushed Stone
PS EC	Cement Treated Graded Crushed Stone
PS ED	Road Asphalt
PS EE	Pre-coated Stone Chippings
PS EF	Kerbs and Haunches
PS EG	Sidewalks, Footpaths and Median Areas
PS EH	Steel Guardrails & Conc. Median Barriers
PS EJ	Concrete Interlocking Block Surfaces
PS EK	Waterbound Macadam Base
PS EL	Dumprock Subgrade Improvement
PS EM	Concrete Surface to Roads
PS EN	Slurry Sealing
PS EP	Single Seal Surface Treatment
PS F	Protection Works
PS G	Pre-stressing
PS H	Reinforced Earth
PS J	Piling
PS K	Bearings
PS L	Structural Work
PS PB	Pavement Layers of Gravel Material
PS PC	Stabilisation of Gravel Base
PS PD	Surface Treatment: Modified Binder

PS PE	Pressure Pipelines: Steel
PS PF	Pressure Pipelines: other than Steel
PS PG	Non Pressure Pipelines and Pc Culverts
PS PH	Manholes and Appurtenant Drainage Works
PS PJ	Pipe Jacking
PS PG	Lateral Support Systems
PS PS	Pump Stations: Sewage
PS S	Reinstatement
PS TA	Road Signs
PS TB	Road Markings

PS.AB PRELIMINARY AND GENERAL SPECIFICATION

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PS.AB.1 SITE FACILITIES

PS.AB.1.1 Temporary Offices for Engineer and Staff

The offices for the Engineer and staff shall be situated in the Site camp area with general security arrangements.

The Contractor is to provide cleaning and maintenance to the Engineer's office complex. The following shall be provided by the Contractor:-

(a) Engineer's Offices

(i) 3 No. (Three) of equivalent Type 1 air conditioned office as are specified in Clause AB.2.2 of the Departmental Technical Specification but modified to dimensions of at least 3m x 3m or 3m x 4m per office. Number of chairs to be reduced to 3 chairs.

(ii) The offices shall allow for an L-shaped desk with 4 drawers, a filing cabinet, a drawing rack, 1 swivel chair and 2 padded chairs. All the necessary insurance shall to be provided for all the above equipment.

(iii) 1 No. (One) 18m^2 air conditioned office to be used as a boardroom, including table (to accommodate for a minimum of 10 people), chairs and a 2m long x 1m high board.

(iv) 2 No (Two) Lockable Toilet facilities with wash basins, {1 no. (one) male and 1 no.(one) female}.

(v) 1 No (one) kitchen with cupboards, sink, a fridge, microwave oven, and hot and cold potable water.

(vi) 5 No. (Five) covered car ports adjacent to the above offices.

(vii) All necessary insurance shall be provided for all the equipment.

(b) Stationary and office equipment for engineer

(i) Print, Photocopy and scanning machine,

(ii) The 3 offices and the boardroom shall have a white board marker and a pin-up white board mounted on the wall

(iii) Internet Access for the Engineer and his staff team, minimum 100 GB per month. A router which allows for at least 10 connections, shall be provided. Cost to include for installations and connections.

Allowance for the costs of the above listed items must be made under the relevant items in the Bill of Quantities.

Areas around Site Office

The access and other roads around the Engineer's Offices shall be treated to make them dust free either by crushed stone, suitable dust-laying oils, or bituminous surfacing being used or other

approved means being adopted. They shall be well drained and kept trafficable and free from mud at all times. Footpaths shall be similarly treated to provide convenient access to all buildings.

Allowance for the costs of the above listed items must be made under the relevant items in the Bill of Quantities.

PS.AB.1.2 Additional Stationary/ Office Equipment

(i) Notebook / laptop for the Engineer. Specifications of the afore-mentioned shall be defined by the Design Engineer.
(ii) Any additional stationary and office equipment required by Engineer and staff.

A Prime Cost Item has been included in of the Bill of Quantities for the provision of ancillary office equipment and stationary and excludes the items and listed in clause PS.AB.1.1.

PS.AB.1.2 Contractor's Camp Site and Depot

The Contractor is responsible to provide a suitable site for his camp and to provide accommodation for his personnel and labourers. Also, there are various other private locations around the site that the contractor may consider leasing to use as the Camp Site. The tenderer shall allow for this in his rates. As these sites are privately owned, the Contractor shall be required to engage directly with the land-owner should he choose to occupy any of the privately owned sites. Proof of agreement with the private owner must be provided to the Engineer.

(a) Contractor's Camp Site / Store Yard

The Contractor must secure written permission of the landowner confirming that permission has been granted or that an agreement is in place for the use of the privately owned land. This documentation must be submitted to the Engineer.

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 SABS 1200A Clause 8.3.2.2 the following conditions shall also apply:

(i) None of the existing roads shall be damaged in any way.
(ii) No waterborne sewerage facilities or potable water connection are available on the site. The Contractor shall make his own arrangements in this regard.
(iii) No electrical facilities exist on site.
(iv) 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.

Allowance for the costs of the above listed items must be made under the relevant items in the Bill of Quantities.

PS.AB.1.3 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.AB.1.4 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 eThekwini Electricity Service Unit. The Contractor will be responsible for arranging for 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) Telecommunication

The method telecommunication may be either through fixed land line in which case 2 landlines must be made available and connected to the Engineer and his staff's offices, one line per office. Alternatively, should it be impractical to connect a fixed land line, the communication shall be by way of cellular communication, in which case the contractor will provide the Engineer and the Engineer's team with air time.

PS.AB.2 SERVICES CONNECTION FEE

Further to Clause AB.2.3 an allowance has been made in the BOQ under Section 1, Part AB for services connection fee. This item covers the connection fee for the following services to the camp site area for the Engineer's office:

(i)	Electricity	:	Connection of one single phase 220 volt 60 amps electrical supply to the site distribution box.
(ii)	Water	:	25 mm Diameter connection.
(iii)	Telephone	:	2 lines

Should the Contractor require either additional connection or an increased power supply any additional costs shall be to the Contractor's account.

Payment for this item will be based on the actual accounts for the connection fees described above.

PS.AB.3 ROAD DEVIATIONS AND TRAFFIC CONTROL

(a) No allowance has been made in the Bill of Quantities for deviations other than for the deviations mentioned in Clause PS.1**.** Costs of any other deviations required by the Contractor shall be included in the rates tendered. The other deviations required by the contractor shall be of Type A, unless otherwise stated by the Engineer.

(b) Deviations required by the Contractor shall comply with the requirements of Clause AB.7. Details shall be submitted to the Engineer for approval at least four weeks in advance of date on which it is anticipated that work on the deviation will commence.

(c) On deviations provided in terms of (b) 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 for compliance with this clause.

(d) Unless indicated otherwise over the entire length and for the duration of the contract, traffic is required to be accommodated in both directions at all times.

The Contractor shall ensure that the full width of the road, or a width of road approved by the Engineer, is available for traffic during the peak traffic periods (i.e. 06:30 - 09:00 and 16:00 to 18:30).

(a) At all times signposting shall be detailed in the part of this document: "Safety in Road Construction".

PS.AB.4 BARRIERS FOR ACCOMMODATION OF TRAFFIC

The contractor shall use New Jersey barriers, water-filled barriers or similar products as approved by the Engineer. The rate shall be in meters (m) and shall include the supply and installation of barriers for the accommodation of traffic.

The contractor must also allow for the installation and removal of the barriers.

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

PS.AB.5 PROTECTION OF DWELLINGS, BUSINESSES AND PRIVATE PROPERTIES

All necessary precautions must be taken by the contractor not to damage any surrounding properties. Should the contractor cause any damage due to the construction of works, the cost to rectify the damage will be to the contractor. The contractor must also carry the appropriate insurance to cover loss of personal property or lives.

- Special attention is drawn to the use of compaction/vibratory equipment. The Contractor must take extra precaution to ensure that the use of construction equipment does not cause direct and indirect damage on structures/buildings in the vicinity of the construction area. Any damage caused will be to the contractors account.
- Negligence of any sort by the Contractor/Sub-contractor or any person employed by the contractor, the cost to correct the error will be to the contractor.
- The Contractor shall take precautions not to damage any plant, structure or property being that of the eThekwini Municipality or that of any third party for the duration of the contract. The Contractor will be held liable for any damage he causes, willfully or un-willfully, either that of the eThekwini Municipality or that of any other third party.

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

PS.AB.6 NOTICE BOARD

The typical notice board layout is given in Part C3.6.1. The following requirements shall apply with regards to the notice board. As per the BOQ, two (2) number notices board is to be provided for the contract. Payment for this item shall be made under Section 1, Part AB of the Bill of Quantities.

PS.AB.7 PROGRESS PHOTOGRAPHS

A provisional sum has been included in the BOQ, Section 1, Part AB for digital photographs and aerial photographs to be taken, as well as for the installation of a CCTV camera. The photographs shall be taken monthly across the entire site, including aerial photos, at the discretion of the engineer.

The contractor is required to supply framed (Frame Size: 614 x 440 mm) coloured A2 pictures of the entire completed project on Photographic Paper on Practical Completion of the entire project and a full set of digital soft copies of all aerial photographs taken. All photographs supplied will become the sole property of eThekwini Municipality. The number of photographs supplied by the contractor will be as instructed by the Engineer.

CCTV cameras shall be mounted on a gantry/mast in a position as directed by the Engineer's Representative. The cameras shall work wireless and connect to a dedicated computer in the Engineer's Offices. The cameras shall be controlled remotely from the computer. The camera is to work of a 12V battery. Cost to include for the supply and installation of the cameras, gantry/mast, 12V battery, inverter if necessary, entry level computer compatible to the cameras, cables and sundries.

PS.AB.8 SUPPLY OF PLANT, MATERIAL AND LABOUR

Except where otherwise specified the Contractor shall at his own expense supply and provide all the construction plant, temporary works, materials for both temporary and permanent works, labour (including supervision thereof), transport to and from the site and in and about the works and other things of every kind required for the construction, completion and where specified, maintenance of the works. The contractor shall also make his own arrangements with the proper authorities and at his own cost for the supply of water, electricity and any other services he may require for the construction and completion of the works.

PS.AB.9 SURVEY COORDINATION - SURVEY OF EXISTING SERVICES

The Contractor, immediately upon commencing work, shall survey existing valves, manholes, catchpits and cable duct markers. The coordinates (X, Y and Z) are to be submitted to the Engineer.

Particular attention should be drawn to the following information which is required within **two weeks** of commencement:
Existing services require accurate survey to be done to determine if a particular service is to be relocated. The as-built information of all services depicted on the services is inaccurate and, as a result, the Contractor will be required to search for all sewer manholes and survey these manholes, (X, Y and Z) of the cover and invert levels.

This shall be done at the immediate commencement of the contract and forwarded to the Engineer. The Engineer will then provide the contractor with setting out information for the new sewer line within **two weeks** from receipt of the survey for the existing sewer line.
Payment for this item shall be made under Section 1, Part AB of the Bill of Quantities.

PS.AB.10 ADDITIONAL SURVEY

An item has been provided in the BOQ for additional survey to be undertaken upon the Engineer's request by the contractor for the Engineer's use.

Payment for this item shall be made under Section 1, Part AB of the Bill of Quantities.
An item for handling cost has been provided in the BOQ for the Contractor administration in this regard.

PS.AB.11 ALLOWANCE FOR PROFESSIONAL SERVICES

A PC Sum item has been allowed in the BOQ, Section 1, Part AB for the fees of the Consulting Engineer. A further item has been allowed for in the BOQ as a percentage item of the Consulting Engineer's fees for the Contractor's administration cost in this regard.

During the contract, the Engineer may also call on the services of external professionals / specialist in the field for site related issues. The payment for their services shall be made through the contract for which an item has been allowed for in the BOQ. The contractor will be paid a percentage of the cost of the professional services fee for his administration cost.

PS.AB.12 SEISMIC VELOCITY TESTING

The method of Seismic Velocity Testing shall be used to determine the classification of the material to be excavated. Should the Contractor believe that the material to be excavated is not considered as 'soft' material or that it may be more adverse in terms of hardness than that agreed to by the Engineer, then a seismic velocity test must be undertaken before any further excavation is undertaken. Alternatively, should the Engineer consider the material to be changing in classification to a less adverse classification, in other works not as hard as the material that was being cut, the Engineer may order a seismic test to be undertaken.

All requests for seismic testing must be approved by the Engineer before the test can be undertaken. Should the contractor make gratuitous claims for the test to be undertaken when it is apparent that the material has not changed to a harder classified material, then the test may proceed at risk in that should the test results indicate the material has not changed to a harder classification, then the contractor shall bear the cost of the test. Alternatively, should the test results indicate that the material has changed classification to a harder type material the cost for the test will be paid for through the contract under the relevant item in the BOQ under Section 1, Part AB.

PS.AB.13 EMPLOYMENT OF CONSTRUCTION MANAGER AND MENTOR(s) TO TRAIN AND GUIDE THE CPG SUB-CONTRACTORS

The GO! Durban Specification for Multi-Criteria Economic Empowerment requires that a minimum of 50% of the Award Value be sub-Contracted to Contractor's registered with the CIDB in categories 1 to 7. To promote development of these sub-contractors, the Principal Contractor is to appoint a Mentor(s) to train and guide the subcontractors in undertaking work awarded to them. The training and guidance of the subcontractors by the mentor(s) shall include but not be limited to activities such as tendering procedures, construction activities, contract administration and supervision, business management, and contract Close-out.

Payment items has been provided in the BOQ under Section 1, Part AB for the Services of the Mentor(s).
The cost of the mentor(s) shall be a Time Based Fee, in line with the ECSA Guidelines, for a person in Category D. The hourly rate of the mentor(s) must be market related and shall be approved by the Employer prior to Mentor(s) commencing with their services.

An additional item has also been allowed for in the BOQ for the contractor's administration cost in this regard. The administration cost is based on a percentage of the cost paid to the Mentor(s). The Handling cost is limited to 7.5%.

PS.B SITE CLEARANCE

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PS.B.1 REMOVAL OF BRICKWORK

The cross reference to Clause B.8.18 in Clause B.8.9 shall be amended to refer to Clause B.8.21.

PS.B.2 SEAL ENDS OF PIPES WITH 230 mm BRICKWORK

All brickwork shall conform to the relevant clauses in Part F, Departmental Specification for Protection Works.
The unit of measurement shall be the square metre (m^2) and the rate shall include for all the materials, labour and plant necessary to seal the ends of the pipes as directed on site by the Engineer.

PS.B.3 REMOVAL OF PIPE CULVERTS

The unit of measure is metre (m). The rate shall cover labour and plant necessary for the removal of the existing pipe culverts, loading and spoiling at the approved spoil site. The rate also includes for excavation.

PS.B.4 GENERAL CLEARANCE AND GRUBBING IN CULVERTS

The unit of measurement shall be square metre (m^2) by use of high pressure jetting and the rate shall include the clearing of the surface, removal of vegetation, litter, building rubble and other materials that may interfere with flow in the culverts.

PS.B.5 REMOVAL OF ROADWAYS

The Tenderer's attention is drawn to the fact that the measurement of roadways is based on the types of materials as listed under Clause B.5.6 and not the full depth of the in-situ road layers. The unit of measurement shall be the cubic metre (m^3) measured loose by means of tally loads. The rate shall include for loading and transporting the material to an approved tip site within a 25km radius.

PS.B.6 REMOVAL OF STREET SIGNS AND POSTS

The unit of measurement shall be number (No.) and the rate shall include for the labour and plant necessary for the careful removal of the signs, loading and either:

(a) storing on site for re-use, or;
(b) transporting to the approved tip and dumping.

PS.B.7 REMOVAL OF CONCRETE INLET COVERS AND FRAMES

The unit of measurement shall be number (No.) and the rate shall include for the labour and plant necessary for the careful removal of the inlet covers and frames, loading and either:

(a) storing on site for re-use, or;
(b) transporting to the Municipal store at Alice Street, Durban and off-loading, or;
(c) transporting to the approved tip and dumping.

PS.B.8 DEMOLITION OF MANHOLES AND INLETS

The unit of measurement shall be number (No.) and the rate shall include for the labour, plant and material necessary for:

(a) breaking down brickwork to 1 m below formation level;
(b) sealing the incoming and outgoing pipes with concrete;
(c) backfilling with clean, coarse sand and compacting to 95% MOD AASHTO;
(d) storing manhole covers on site for re-use or spoiling to tip.

PS.B.9 CLEANING OF STORMWATER DRAINS

The existing stormwater drains will require clearing by means of high pressure jetting. The contractor is to ensure that all silt / debris from the line is removed and carted to spoil. The unit of measurement is meter (m) irrespective of pipe diameter.

PS.B.10 TRANSPORTING MATERIAL TO MUNICIPAL SITES

The unit of measurement shall be ton kilometer (t*km) and the rate shall include for the labour and plant necessary for the loading, transporting and offloading to any Municipal store as directed by the Engineer.

PS.C CONCRETE WORK

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PS.C.1 CONSTRUCTION – FIXING OF REINFORCEMENT

Add the following paragraphs to C.5.1.3:

"The concrete cover for all structural concrete elements shall be within the acceptance ranges shown in Table C.5.1 unless otherwise specified on the issued construction drawings. Prior to fixing the steel, samples of the proposed cover and spacer blocks shall be submitted to the engineer along with a written statement for in-situ manufacture, if applicable, for approval. The overlap of steel reinforcement bars shall be such that the cover to the lapped bars remains constant at the specified cover. All steel fixing wire shall not be cut over into reinforcement but shall be bent into the reinforcement to allow for sufficient cover.

Concrete cover and spacer blocks shall be made using the same cement and aggregate type as the main concrete with the same water/ cement ratio so that differences in shrinkage, thermal movements and strain are minimised. Cover blocks shall be water cured by submersion for a minimum of 7 days and thereafter kept submerged in water until immediately before fixing onto reinforcing steel. Where concrete cover blocks, subsequent to fixing, have visually dried out they shall be remoistened by an appropriate method so that they are damp before the placing of concrete. Where fixing wire is inserted into cover blocks, it shall be galvanised. Cover and spacer blocks manufactured from other materials e.g. plastic, shall be approved by the engineer prior to being used on site. All cover blocks regardless of the type of material manufactured from, shall not be visible on exposed concrete surfaces."

PS.C.2 CONSTRUCTION – FALSEWORK, FORMWORK & CONCRETE FINISH

PS.C.2.1 FORMWORK AND CONCRETE FINISH

Add the following paragraphs to C.5.2, C.5.3 & C.5.4 accordingly:

Refer to Departmental Specifications part C - clause C.5.3 – 'Formed Concrete Surface Finishes.'

The finish to exposed concrete surfaces shall be Class 3(a) smooth finish. This is an "off-shutter" finish and it is generally accepted that the desired finish is only achieved with waterproof timber shutter-boards; no steel shutters shall be used for this finish with the exception that purpose made steel moulds will be permitted for traffic barriers and precast items.

Refer to clause C.5.4 – 'Concrete Upper Surface Finishes.' All exposed horizontal concrete surfaces shall be finished to a Class 3 wood float finish unless otherwise indicated. The surface of exposed culvert parapets and traffic barriers shall be to a Class 4 steel trowel finish.

All exposed concrete edges shall receive a 20x20mm chamfer (including foundations), the cost of which shall be included in the rate for shuttering. The formwork at construction joints shall have moulding strips 25mm x 25mm neatly butted and set at the position of the construction joint.

PS.C.2.2 FALSEWORK

Add the following paragraphs to C.5.2, C.5.3 & C.5.4 accordingly:

Clause C.5.2. of Departmental specification, Part C refers. The Contractor shall be entirely responsible for the foundation assessment, loading assessment, analysis, safe design and production of working drawings, construction and dismantling of the Falsework.

The contractor shall be responsible for any damage to the falsework by flooding, and shall take appropriate steps to manage any risk of damage caused by flooding.
The contractor will be required to submit a drawing to the Engineer for record and comment before any falsework is erected. The drawing shall be signed by a registered Professional Engineer certifying that he has checked the design of the falsework and that the drawing is correct and in accordance with the design. Before any load is applied to the falsework, a certificate shall be provided by a professional engineer certifying that he has checked the falsework and that it has been erected in accordance with the drawing.
Approval by the Engineer of the contractor's proposals for falsework shall not relieve the contractor of his responsibility for its stability or for any loss or damage arising out of defective materials, flooding, theft or riots.

The Contractor shall make good any damage to the completed structure caused by falsework or shuttering.

The centering shall be accurately maintained in line and level. All levels shall be checked with a surveyor's level immediately before concreting is commenced and immediately it is completed.

PS.C.3 SETTLEMENT AND MOVEMENT CONTROL

The contractor shall fix bench marks as directed by the engineer. The benchmarks shall be manufactured from grade 316 stainless steel round bar of 10mm diameter, 60mm long. The protruding end shall be rounded to remove sharp edges. The benchmarks shall be drilled and epoxied 40mm deep into the structure as directed by the Engineer.
It shall be the responsibility of the contractor to record the levels of these benchmarks continuously during the construction and at least once monthly during the maintenance period of the contract. Levels shall be correct to the nearest millimetre and shall be taken with a metric staff. A copy of the level results shall be made available to the Engineer as soon as they have been taken. Check levels may also be taken on request by the Engineer from time to time.

PS.C.4 PRECAST KERBS, CHANNELS AND PAVING SLABS

PS.C.4.1 PRECAST KERBS AND CHANNELS

Refer to Departmental Specifications part EF – ‘Kerbs and Haunches’
The unit of measurement shall be the metre (m) and the rate shall cover the supply of all precast items, including transporting, loading, laying and jointing (including all expansion joints and sealer), cast-in-situ concrete foundation, including mixing, laying, float finish, setting put of kerb and channel, plant, testing, labour, equipment, materials, protection and incidentals necessary to complete the work as specified.

PS.C.4.2 PAVING SLABS

Refer to Departmental Specifications part EG - clause EG.8.3 – ‘Sidewalks, Footpaths and median barriers;
Precast slabs shall be constructed in accordance with the provisions of Part EG Specification for

Sidewalks, Footpaths and Median barriers.

The unit of measurement shall be the square metre (m2) of completed area. The rate shall cover formation preparation, all necessary compaction, supplying and laying of the precast slabs on the cement mortar foundation, cutting slabs to size, filling joints with cement mortar and filling with granolithic concrete.

PS.C.5 CAST IN-SITU BARRIERS

Cast in-situ parapets / New Jersey Barriers shall be constructed as per the issued construction and tender drawings by the Engineer and shall be constructed in accordance with the provisions of Part C Specification for Concrete Work. The quality of finish shall be to a generally high standard and to degree 1 accuracy as described under clause C.6.1.

The in-situ casting length panels and expansion joint gap between the parapets / New Jersey Barriers shall be specified as per the issued construction drawings.

The unit of measurement shall be linear metre (m). The rate shall include for shutter class 3(a), concrete grade 40/19, for forming construction joints, expansion joints, the supply and fixing of jointing materials (bitumen impregnated soft board or polystyrene), including polysulphide sealant, forming chamfers and steel float finish to the upper surfaces.

All parapet reinforcement, including parapet starter bars from the deck slab must be galvanised as per the details on the issued construction drawings.

Casting of the in-situ parapets or placing of precast parapets shall only commence after removal of the deck staging. Where specified on the drawings the top of the parapets after placing shall follow the pre-camber levels specified on the drawings to allow for future creep effects. This is of particular importance on the edges of very long skew decks. The levels of the top rail of each panel of the balustrades/parapets shall be confirmed in writing by the design engineer.

The unit of measurement for the End Blocks shall be number (No.) of End Blocks constructed complete in accordance with the drawings. The tendered rate shall include for shutter class 3(a), concrete grade 40/19, forming chamfers, steel float finish to upper surfaces, full compensation for all materials, labour, plant, and other incidentals required for constructing the end blocks complete with steel plates, bolts, nuts and all guardrail fixtures as specified on the construction and tender drawings, excluding only reinforcing steel.

PS.C.6 POLYSULPHIDE SEALANT

The sealant used in expansion joints between parapets / barriers and retaining wall panels shall be a two component manganese cured polysulphide sealant conforming to B.S.4254 of 1967 - Two part polysulphide based sealant for the building industries, as amended.

The contractor can propose the use of any other structural sealant provided the contractor supplies the Engineer all approved technical specifications and it must then be approved by the Engineer.

The tendered rate for cast in-situ parapets shall include for sealing of joints between balustrade units as shown on the issued construction drawings.

PS.C.7 CONCRETE PEDESTRIAN HAND RAILINGS

The unit of measurement shall be the metre of railing complete in accordance with the issued construction drawings. The pedestrian hand railing shall include for construction of the concrete upstand for precast concrete posts on the supporting wall, deck, coping or beam, and the attachment of the post to the hand railing. The rate also includes all work above the concrete upstand and for any kerbing and coping forming an integral part of the railing.

The tendered rate shall include full compensation for all labour, plant and materials (including reinforcing steel requirements) for the manufacture and erection of the precast concrete railing.

PS.C.8 CONSTRUCTION JOINTS

Add to the following C.5.14:

No construction joints other than those indicated on the drawings will be permitted without the written approval of the Engineer. In all cases the proposed method of forming the joint shall be discussed and agreed with the engineer.

The formwork at construction joints shall have moulding strips 25mm x 25mm neatly butted and set at the position of the construction joint.

PS.C.9 FOUNDATIONS FOR STRUCTURES

Where pad /spot /strip foundations, foundations slabs or pile caps are cast directly against the face of the excavations, the volume of concrete measured for payment shall be the total volume of concrete placed or the volume based on the plan dimensions detailed on the drawings plus a 100mm allowance for over break on each applicable side whichever is the lesser. No formwork to the footing shall be measured when the concrete is cast against the face of excavations.

PS.C.10 BLINDING FOR STRUCTURES

Add the following to C.8.1:

Concrete blinding shall extend 100mm all around beyond the horizontal dimensions of all formed footings to facilitate placing of the formwork, unless otherwise directed by the Engineer.

In the case of structures where excessive ground water is encountered, the blinding layer may extend over the full plan area of the base of the excavation and beyond the edge of the foundation where required.

PS.C.11 CURING AND PROTECTION

Add the following paragraphs to C.5.13:

Where curing by retention of formwork is used as the only method of curing the concrete, it must be left in place for the minimum period but in no instance shall it be less than 7 days unless otherwise approved by the Engineer.

Where a curing compound is used, it shall consist of an approved water based low viscosity clear wax emulsion applied in accordance with the manufacturer’s instructions.

The materials used for formwork shall take into account properties such as thermal insulation and moisture absorption when assessing the suitability of the material, to the approval of the engineer.

If impermeable curing membranes are to be used as a curing method, they shall be installed at the same time as formwork is removed and no portion of a concrete surface may be left unprotected for a period in excess of 2hours. If the surface is an unformed finish e.g. top of deck slab, then the surface must be protected immediately by appropriate methods approved by the engineer after it is finished, without damage to the surface, since it is vulnerable to plastic shrinkage cracking due to high rates of evaporation while the concrete is still in a plastic state. Plastic shrinkage and settlement shall not be permitted on any of the structural elements since it compromises the durability of the concrete. In order to prevent early settlement and shrinkage of the concrete, the concrete placed shall be re-vibrated after initial compaction while the concrete is still in a plastic state. Any remedial measures shall be as approved in writing by the engineer.

On deck slabs, the top surface shall be cured using the method by constantly spraying the entire area of exposed surfaces with water (mist spraying) unless the contractor provides a suitable alternative that is accepted by the Engineer.

PS.C.12 PORTLAND BLAST FURNACE CEMENT

Add the following paragraph to C.8.1

Portland Blast furnace cement may be used in any part or the works except in sewer pipes and where high alumina cement (H.A.C.) has been specified. The Contractor's attention is however drawn to the characteristics of concrete made with this material and he shall ensure that no excavations containing such concrete are backfilled or structures loaded until the concrete being covered or loaded has achieved sufficient strength to withstand the imposed loads.

PS.C.13 NEW SABS SPECIFICATION FOR PORTLAND BASED CEMENT

Add the following paragraph to C.8.1

The new SABS ENV. 197-1 (adopted in 1996): Cement - composition, specification and conformity criteria Part 1 : Common Cement, replaces SABS 471 - 1979, SABS 626 - 1971 and SABS 831 - 1971 in Clause C.2 of Part C : Concrete Work.

PS.C.14 DRAINAGE STRIPS

The unit of measurement shall be the linear metre of drainage strips laced behind the earth faces as shown on the drawings.

The tendered rate shall include full compensation for all material, labour, and equipment to supply and install the strips as shown.

Unit …….metre (m)

PS.C.15 PERFORATED DRAINAGE PIPES

Perforated drainage pipes - M65 Netlon drainage pipe Wrapped in Kaymat U34 or similar approved.

The unit of measurement shall be the linear metre of perforated drainage pipes placed behind

the earth faces as shown on the drawing.

The tendered rate shall include full compensation for all material, labour, and equipment to supply and install the perforated pipes as shown including the 300mm wide by 50mm thick mortar bed under the core.

Unit ……metre (m)

PS.C.16 PVC PIPES IN STRUCTURES FOR DRAINAGE AND DRAINAGE STRIPS

PS.C.16.1 PVC PIPES IN STRUCTURES FOR DRAINAGE

The unit of measurement shall be the linear metre of PVC drainage pipe and diameter as indicated on the drawings and as per the items.

The tendered rate shall include full compensation for all material, labour, and equipment to supply and install the pipes as shown on the drawings.

The rate shall also include correctly setting up the orientation and position of the scupper through the deck slab or as directed by the Engineer.

Unit ……metre (m)

PS.C.16.2 DRAINAGE STRIPS

The unit of measurement shall be the linear metre of drainage strips laced behind the earth faces as shown on the drawings.

The tendered rate shall include full compensation for all material, labour, and equipment to supply and install the strips as shown.

Unit ……metre (m)

PS.C.17 DEMOLISHING EXISTING CONCRETE

Refer to Departmental Specifications part B – clause B.5.5 – 'Site clearance'

Demolition and removal of reinforced concrete shall be carried out in accordance with the provisions of Part B Specification for Site Clearance.

No demolition of existing structures shall take place without prior written approval by the Engineer.

Where specified, the contractor shall demolish, break up and remove structures and underground structures such as concrete, reinforced concrete and all superficial obstructions on site effected by the works or as indicated on the drawings to a depth as directed by the Engineer. The work shall consist of excavation to expose the obstruction including upholding the sides of the excavation; and breaking out, removal and disposal of the materials.

Where underground structures or obstacles are abandoned any incoming or outgoing pipes shall be adequately sealed with concrete. All demolition material shall be disposed of at an approved tip.

The unit of measurement is cubic metre net in place before removal. The rate shall cover everything required for the complete demolition of the structure or obstacles down to natural ground level and the removal and disposal of material to an approved tip. Blasting is not envisaged for this contract.

PS.C.18 SEALING JOINTS

The unit of measurement shall be the meter of sealant, seal or waterstop of each type installed.

The tendered rates shall include full compensation for supplying all materials, forming or cutting the concrete to required shape and size, all labour, equipment and incidentals required for sealing the joint complete in accordance with the prescriptions and for all waste materials.

PS.C.19 DOWEL GUIDES

The unit of measurement shall be the number of dowel/guides of 25mm diameter stainless steel grade 304.

The tendered rate shall include full compensation for supplying all materials, including anchor bolts, manufacturing the dowels/guides, transporting, handling and storing, and all labour, equipment and incidentals required for installing the dowel/guides in between barriers as detailed in construction and tender drawings.

PS.C.20 FILLED JOINTS

The unit of measurement shall be the square metre of filled joint calculated from the surface area of the joint.

The tendered rates shall include full compensation for supplying and installing the joint filler and all materials required, all labour and incidentals required for completing the filled joint as prescribed.

The sealant used in expansion joints between parapets/barriers and retaining wall panels shall be a two component manganese cured polysulphide sealant conforming to B.S.4254 of 1967 – Two part polysulphide based sealant for the building industries, as amended.

PS.C.21 SETTLEMENT AND MOVEMENT CONTROL

The contractor shall fix bench marks as directed by the engineer or as shown in drawing number 48919. The benchmark shall be manufactured from grade 316 stainless steel round bar of 10mm diameter and 60mm long. The protruding end shall be rounded to remove sharp edges. The benchmark shall be drilled and epoxied 40mm deep into the structure as directed by the Engineer. It shall be the responsibility of the contractor to record the levels of these benchmarks weekly during the construction and at least once monthly during the maintenance period of the contract. Levels shall be correct to the nearest millimetre and shall be taken with a metric staff. A copy of the level results shall be made available to the engineer as soon as they have been taken. Check levels may also be requested by the engineer from time to time.

PS.DA EARTHWORKS: BULK

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PS.DA.1 INTERPRETATIONS

The following shall be added to the list of definitions.

Top of earthworks: The top of earthworks shall be defined as the underside of the selected layers under roads, the base under sidewalks and the underside of the topsoil layer under verges and embankments.

PS.DA.2 GEOTECHNICAL INFORMATION

Tenderer's attention is drawn to Part C.4 of this contract document, "Geology, Geotechnical and Materials Information", which describes the geology of the area and the associated material properties.

PS.DA.3 TOPSOIL

Tenderers are to note that all topsoil from site is to be excavated to stockpile for later use. The volume of topsoil removed is included in Section 3 Part DA of the Bill of Quantities.

PS.DA.4 EXCAVATION OF MATERIAL FROM SITE

(a) Further to Clauses DA.8.1 and DA.8.3 Tenderer's are to note that the measurement of excavation of material on site is based on the cut volumes in place before excavation between the original ground levels after stripping of topsoil and the top of earthworks calculated from cross sections as described in Clause DA.8. 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.

(b) The nature of the roadworks is such that a considerable amount of the excavation shall be 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.

(c) The Contractor's attention is drawn to the possible presence of watermains in the road reserve area. The Contractor shall limit the size and type of construction plant used in this area so as not to damage any existing watermain. Any damage to the watermain due to the size and type of construction plant used will be to the Contractor's account.
No additional payment will be made for compliance with this clause and Tenderer's shall include in the relevant rate for all extra plant, labour and materials required to work in these areas.

PS.DA.5 EXCAVATE UNSUITABLE MATERIAL BELOW EMBANKMENTS OR FORMATION

Further to Clause DA.8.3 the rate shall also include for trimming the area excavated to the required level and compaction of the in-situ material.

PS.DA.6 IMPORT SUITABLE FILL MATERIAL

The fill material shall conform to the requirements for a G9 or better Material as described in TRH 14 with the following Amendments:-

(a) The material shall be free of weathered shale and will be subject to the approval of the Engineer.

PS.DA.7 COMPACTION OF FILL

The second paragraph of Clause DA.8.5 is to be amended by substituting "top of earthworks" for 'formation' where it occurs.

PS.DA.8 FORMATION

The Tenderers shall make full allowance in the rates for areas of formation in cut or where the fill layer thickness is less than 150 mm. The contractor shall not be paid separately for formation that is within 150mm of the existing ground line.

PS.DA.9 TOLERANCES

Clause DA.6 shall be amended to read as follows:

The allowable tolerances shall be:

(a) the design angle $\pm$ 2 degrees for the angle of the cut or fill slope;
(b) not less than the design width, nor more than 300 mm greater than the design width for the transverse horizontal embankment width at any level; and
(c) the layer thickness $\pm$ 20 mm for topsoil;
(d) For the formation, the Contractor will be required to place level pegs longitudinally at 10 m intervals on the road construction contract and elevation tolerances shall be taken on a section of the works. (When a portion of the works is less than 500 m² one tolerance reading per 10 m² shall be taken).

In any section the average of the elevations taken shall be such that the average thickness of the succeeding layer or layers above the formation shall be not less than that specified/nor greater than that specified plus 20 mm.

The standard deviation of the differences between the actual and design levels shall not be greater than 10 mm.

PS.DA.10 DEDUCTIONS FOR RETESTS

Deductions for re-tests is expanded in Clause PS.5.5 of this Project Specification.

PS.DA.11 OVERHAUL

Notwithstanding the requirements of Clause DA.8.10, payment for haulage of spoil material to an approved tip site has been allowed for under Section 3 of the Bill of Quanities.

PS.DA.12 STOCKPILE HANDLING

Tenderers are to note that no stockpile handling will be payable on this contract. Cut material suitable for fill, shall be placed directly into fill without being stockpiled. If this is not possible, the Tenderer shall include in the bulk earthworks rates, any costs that he would incur in stockpiling and subsequent rehandling of material.

PS.DA.13 STOCKPILE AREAS

Cut material should ideally be moved directly to fill unless there are circumstances that prevent the contractor from doing so. Moving of material from cut to stockpile shall only be done with the approval of the Engineer. The exact location shall be pointed out by the Engineer. The unit of measurement shall be cubic meter (m3) and shall include for labout, plant, and material.

PS.DA.14 SUBGRADE IMPROVEMENT AND GEOFABRIC BLANKET

The geofabric shall comply with Clause PG.3.8. In addition to the afore-mentioned clause, there have been many new developments in the geotextile industry with each manufacture detailing its own specification. The instruction from the Engineer to use a certain geotextile shall require the Contractor to supply and install that geotextile or an approved equivalent by the Engineer.

The unit of measurement shall be the square metre (m^2). The rate shall include for the supply of the material, laying, joining, cutting and waste.

PS.DA.15 CHOKING OF G5 MATERIAL INTO DUMPROCK LAYER

After the dumprock layer has been processed and approved by the Engineer, G5 material shall be imported and spread over the dumprock layer. The G5 material must fill the voids of the upper surface of the dumprock and then be used to provide for level/uniform surface on the dumprock layer. Rate to include for importing, spreading, choking, spreading again and then rolled with a steel drum roller

with vibration. On completion of the rolling and vibration, all voids are to be closed to provide a uniform surface. A light roll without vibration by the roller may be required again. The unit of measurement shall be in tonnes (t) and the quantity used will be based on the tally slips. All original tally slips to be received by the Resident Engineer.

PS.DB EARTHWORKS FOR PIPE TRENCHES

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PS.DB.1 BEDDING AND BACKFILL MATERIALS

PS.DB.1.1 General

1) The measurement for bedding shall be the total through length along the centre of the pipeline measured HORIZONTALLY with deductions made for line valve chambers.
2) Bedding material required for the backfill of bell holes will be paid for by the Council.
3) The unit of measurement for bedding shall be the Linear Metre (m), and the rate shall include for the placing and compacting of the bedding material up to the underside of the backfill for the various pipe diameters.
4) Separate items have been included in the Bill of Quantities for the provision of bedding material from a Contractor's commercial source.
5) Backfill materials shall comply with Clause DB.3.4. An item has been allowed in the Bill of Quantities for the importation of backfill material where so ordered by the Engineer.
6) The Contractor shall allow for haulage in the rate for provision of imported bedding and backfill. No overhaul will be paid for these items.

PS.DB.1.2 Watermains

1) Notwithstanding Clause DB.3.6 of Part DB : "Earthworks for Pipe Trenches", only a clean sand containing no particles of diameter exceeding 10mm, having a Plasticity Index (P.I.) not exceeding 10 and free from vegetation and lumps shall be used for the bedding cradle and selected fill blanket. It is anticipated that most of the bedding material will have to be provided from an off-site source. Bedding shall be constructed to the dimensions required for Class 'C' bedding.

2) Contractors are advised that the choice, placement and compaction of bedding and backfill materials are critical to the satisfactory performance of steel pipes. Therefore strict adherence to all specifications in this regard will be enforced.

PS.DB.1.3 Sewer Pipes

1) Bedding for the sewers shall be class "C" for rigid pipe or "flexible" for flexible pipes. Where the sewer pipe offered is classified in accordance with SABS 0102 part 1 1987 as a rigid pipe, the bedding shall be class "B" and for flexible / semi-flexible pipes, the bedding shall be as for flexible pipes as detailed in the Standard Engineering Specification Part DB, Earthworks for pipe trenches. However in the case of flexible / semi-flexible pipes the material to be used in the selected fill blanket and selected fill bedding cradle shall be selected granular material.

PS.DB.1.4 Stormwater Pipes

All bedding to stormwater pipes on this Contractor shall be either Type “A”, "B" or Type "C" as is specified in Part DB of the Departmental Technical Specification.

PS.DB.1.5 Telkom Ducts

Notwithstanding Clause DB.3.6 of Part DB : "Earthworks for Pipe Trenches", only a clean sand containing no particles of diameter exceeding 10 mm, having a Plasticity Index (P.I.) not exceeding 10 and free from vegetation and lumps shall be used for the bedding cradle and selected fill blanket. It is anticipated that most of the bedding material will have to be provided from an off-site source. Bedding shall be constructed to the dimensions as is detailed on Drawing No. 38589 : "Telkom Cable Ducts and Junction Box Details".

PS.DB.2 EXCAVATION AND BACKFILLING - EXISTING SERVICES

The Tenderer's attention is drawn to the presence of existing services in the area. The Contractor may find it impractical to use mechanical plant for excavation on some portions of the works due to conditions caused by the presence of these services.

The Tenderer's attention is further drawn to the fact that his rates for excavation and backfilling must include for all costs associated with working around these existing services and their protection and accommodation, as no claim for extra payment will be accepted for increased working space or for the inability to use plant in any circumstances.

PS.DB.3 EXCAVATION, BACKFILLING AND REINSTATEMENT OF TRENCHES (CLAUSE DB.5.3.2)

Further to and notwithstanding the requirements of the Departmental Specification, Part DB, the following requirements in respect of trench excavation, backfilling and reinstatement shall be adhered to :

1) It is considered that portion of the excavated material will not comply with the specification for material suitable for backfilling. It will be the Contractor’s responsibility to use selective methods of excavation to ensure that this unsuitable material does not contaminate other materials suitable for reuse.

2) It is anticipated that a fair portion of the material excavated for trenches in existing natural ground is likely to be classified as "Rock" in terms of Part DB of the Departmental Technical Specification, and that blasting methods will be employed to facilitate excavation. Tenderers are to note that the unit of measurement shall be the linear metre (m), and that the rate tendered shall be inclusive of all work or operations necessary to drill, blast, excavate, backfill, spoil or stockpile the material.

3) It is considered that portion of the excavated material will not comply with the specification for material suitable for backfilling in areas subject to traffic loading. An item has been included in the Bill of Quantities for the disposal of unsuitable material to tip and the Contractor's tendered rate for this item shall include for stockpiling if deemed necessary.

4) Where the Contractor chooses to trench by open excavation e.g. battering sides of the trenches, this over-excavation shall not be backfilled with unsuitable excavated material but shall be backfilled with the same imported material as used for the pay-width of the trench. Payment for the imported backfill shall be limited to the pay-width of the trench only and the Contractor shall allow in his rates for any extra backfill material that may be required as a result of over-excavating

5) Notwithstanding the method of trench excavation adopted by the Contractor, the restriction on the maximum trench width as defined in specification Clause DB.6.1 - must be strictly adhered to. Should the Contractor over-excavate the trench then he will be responsible for increasing the pipe strength and / or bedding class to be used, all to his cost.

The measurements for excavation shall be the total through-length along the centre-line of a pipeline measured HORIZONTALLY with deductions for manholes. In addition, trench depth will be measured vertically on the centre-line of the pipeline from the existing ground level to the invert level.

PS.DB.4 SHORING OF TRENCHES TO EXCAVATIONS

The Contractor shall be responsible for the design and installation of all shoring where applicable, which must not only comply with all of the relevant safety regulations pertaining to the provision of safe working conditions in earthwork excavations but also will provide sufficient lateral support to prevent any damage to adjacent structures, services or road surfaces.

In addition to the above and the requirements of Clause DB.5.3.2 (a) all excavations in road reserves and adjacent to structures and where excavations are in excess of 1,0 m in depth shall be supported with close shoring and no open or intermittent shoring of any description will be permitted.

The minimum requirements for shoring of these trench excavations shall be as follows :

1) Either ribbed steel trench sheeting of suitable thickness with an edged return for interlocking or suitably sized timber poling boards or runners are to be used. Adequate sized walings at suitable intervals are to be provided. Struts shall consist of either adjustable tubular steel jacks or timber suitably sized for the load application.

2) The shoring for the excavations shall be progressively installed as the excavation proceeds. Care being taken to ensure the soil is not removed within a minimum 300 mm of the toe of the runners.

3) Installation of shoring after the trench has been excavated to a depth in excess of 1,5 m is not acceptable.

4) Details of the proposed shoring must be supplied to the Engineer at least **two weeks** before the operation commences. During the backfilling, the sides of the trench including the road layers above any over-excavated sections are to be cut back to a point behind the over excavation.

5) No separate item has been allowed for in the Bill of quantities and the Contractor shall allow in his excavation rates for shoring as necessary.

The cutting back of the trench sides shall be to the Contractor's account. Payment for reinstatement of the road hardening shall be based on the widths given in Clause DB.8.3.3.

PS.DB.5 EXCAVATION FOR SERVICES TO BE LAID BY OTHERS

Where indicated, the Contractor shall be required to excavate a trench for the installation of services by others. (Depth and width of trench shall be confirmed on site). The trench bottom shall be trimmed to comply with the tolerances specified under Clause DB.6.3, after which it shall be taken over by the service organisation. After installation of the services the trench shall be backfilled as part of the bedding operation to approximately 300 mm above the service.

Thereafter the Contractor shall continue the backfilling utilising suitable material from the trench excavation, in 150 mm layers which shall be compacted to 95% Mod. A.A.S.H.T.O. density. The unit of measurement shall be the cubic metre (m^3) and the rate shall cover the work described under Clause DB.8.1.

PS.DB.6 EXCAVATION IN ROAD AND PAVED AREAS

Further to Clause DB.8.7 the rate tendered shall include for saw cutting the existing road asphalt.

PS.DB.7 COMPACTION OF TRENCHES

Further to Clause DB.8.5, Tenderers are to note that in all cases the compaction of the trench bottom and the trench backfill shall be to 95% Mod. A.A.S.H.T.O. An extra-over item has not been included in the Bill of Quantities and tenderers shall include for these costs under the relevant excavate and backfill items.

PS.DB.8 BACKFILLING OF SERVICE TRENCHES

As part of the bedding operation, services laid or relocated by others will be backfilled by them to approximately 300 mm above the service. The backfill shall then be continued by the Contractor up to the original level. The backfilling shall be carried out using suitable material from the trench excavation, in 150 mm layers which shall be compacted to 95% Mod. A.A.S.H.T.O. density.

The unit of measurement shall be the cubic metre (m^3) and the rate shall include for all plant and labour required to select, place and compact the material as specified.

PS.DB.9 OVERHAUL

Notwithstanding the requirements of Clauses DB.8.1 and DB.8.17 no additional payment shall be made for haulage.

PS.DB.10 GEOFABRIC BLANKET

The geofabric to stone bedding must comply with Clause PG.3.8 of Part PG : Non-Pressure Pipelines and Precast Concrete Culverts.

The unit of measurement shall be the square metre (m^2). The rate shall include for its supply, laying, joining, cutting and waste.

PS.DB.11 EXCAVATION FOR CONCRETE LINED DRAIN

The unit of measurement shall be the cubic metre (m^3). The rate shall include for all labour, plant and material necessary for the excavation of soft material to spoil for the concrete lined drain.

The rate shall include for all setting out, clearing and grubbing, excavation by hand or plant, loading the material directly into trucks and transporting the material to the approved tip and disposal.

PS.DB.12 BACKFILLING

Where bedding is compacted by saturation, no backfill material may be placed or compacted on top of this, until such time as the bedding has sufficiently dried.

PS.DB.13 SOIL COMPACTION TESTING

The following are the minimum frequencies for the process control tests to be executed by the CONTRACTOR at his own expense:

1. Pipe bedding: one density test on each 9m of pipe trench.

2. Normal trench backfilling: one density test on every layer for every 9m of pipe trench.

3. Backfilling in areas subject to vehicle loads : one test on each layer of 100mm at each road.

The positions of these minimum number of density tests shall be determined randomly by the Contractor and shall be clearly documented with the results. The results of the tests be submitted to the Engineer and shall prove to the Engineer that the work as a whole was done satisfactorily.

PS.DB.14 SAFEGUARDING OF EXCAVATIONS

The precautions for excavations as specified in the relevant clauses in this section shall apply to all trench excavations.

The Contractor or his agent or his representative shall take all the steps necessary to ensure that no person is required or allowed to work in a trench or any other unsupported overhanging excavation which is more than 1,0m deep, and any excavation which has not been adequately supported, shored or braced if there is any danger whatsoever of the sides of the excavation collapsing. The support, shoring or bracing to be designed and constructed by the Contractor, shall be strong and sturdy enough to support the sides of the excavation in question.

The Contractor shall note that this clause does not relieve him of any obligations required in terms of the Occupational Health and Safety Act.

PS.DB.15 BARRICADING EXCAVATIONS

All excavation areas are to be barricaded to the satisfaction of the Engineer

All costs arising from these requirements are to be included in the relevant rates for excavation.

PS.DD EARTHWORKS FOR STRUCTURES

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PS.DD.1 EXCAVATION FOR STRUCTURES

Excavation shall be carried out in accordance with the Department Specification Part DD - Earthworks for Structures.

Excavated material shall be taken to spoil unless the Engineer shall have issued written confirmation that the material is deemed suitable for re-use.

Tenderers shall note that excavation for structures is measured to the neat dimensions of the foundation in plan as if excavated with vertical sides. An additional allowance of 500mm is added to each side of the plan dimensions of the foundations to accommodate for working space and shutter setting-up.

It is anticipated that full lateral support will be required where the depth of excavation is in excess of 1m. Tenderers shall make allowance in their tendered excavation rate for all necessary sheeting, timbering, strutting and shoring as per Clause DD.5.2 of the City of Durban's Standard Engineering Specification: 1985.

Detrimental effects on the existing structure caused by construction activity is not envisaged. The Contractor therefore, shall ensure protection of the existing culvert against settlement for the duration of the contract. The Contractor shall keep all excavations clear of flowing water by providing efficient water pumping solutions and/or as instructed by the Engineer.

All other roadwork excavation which is not covered by Restricted Excavation, shall be deemed to be covered under Bulk Earthworks. Backfilling to abutments, foundations, culvert walls and retaining walls shall be as specified under Part DD of the standard engineering specification, limited to the plan dimensions.

PS.DD.2 DEWATERING

As sum item has been included in the Bill of Quantities for the contractor to apply suitable, effective drainage methods for preventing the ingress of water into excavations and to keep them dry as is reasonable. The drainage measures, with the exception of pumping, shall be maintained until the backfilling has been completed. Between the various construction stages, pumping may be interrupted in consultation with the engineer. Any draining or pumping of water shall be done in a manner as will preclude the concrete or materials or any part thereof from being carried away. The Contractor shall be responsible for the design, installation and removal on completion of any cofferdamming, protection works, river diversions and dewatering so required during the construction process.

PS.DD.3 CEMENT STABILISED BACKFILL

Where indicated on the drawings or directed by the Engineer, backfill material shall be stabilised by the addition of 2 pockets of cement per cubic metre of backfill (approx 1:25 mix by volume). In order to produce a homogeneous mixture the backfill material shall either be mixed using a suitable mixer or mixed by hand before placing. Sufficient water must be added, without saturating the mixture, to achieve uniform mixing and compaction. The processing, placing and compaction must be completed within a period of 6 hours from the time the cement is first added to the material.

MESUREMENT AND PAYMENT

The unit of measurement shall be the cubic metre (m^3) and shall be measured Extra Over to item DB.8.5 ‘Excavation and Backfilling.’ The unit rate for cement stabilisation of the backfill shall also include for -

a) The supply of cement
b) All mixing and processing of the backfill material; and
c) Complying with a time restriction of 6 hours.

PS.DD.4 BACKFILL SEQUENCE

Refer to Departmental Specifications part DD - clause DD.5.6 – ‘Backfill around Structures’

Backfilling onto structures shall be carried out in accordance with the provisions of Part DD of Engineering Specification, ‘Earthworks for Structures.’

Add the following to clause DD.5.6;

Should the Contractor wish to deviate from the provisions of clause DD.5.6, he shall attain written approval from the engineer prior to deviating. The contractor shall make good any damage arising from notwithstanding conditions of clause DD.5.6 and PS.DD.4 at his own cost.

PS.DD.5 OVERHAUL

Notwithstanding the requirements of DD.8.4 no additional payment shall be made for overhaul.

PS.EB GRADED CRUSHED STONE

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PS.EB.1 SUB-BASE

(a) Details of the source of the supply of the sub-base material are required by the Engineer before roadworks commence.

A Confirmation of Acceptance for this layer will only be issued by the Engineer when levels and densities are correct.

(b) No additional payment shall be made for restricted conditions, and the Tenderer shall therefore make due allowance in the rate for the graded crushed stone layer for any additional work (including hand work) required to place, spread, process and compact the layer in restricted conditions.

PS.EB.2 PRIMING

After the issue of the Certificate of Acceptance referred to in PS.EB.1, the sub-base shall then be primed with an Inverted Emulsion Primer conforming to S.A.B.S. 1260 of 1979 and applied at the rate of 0,6 l/m².

PS.EC CEMENT TREATED GRADED CRUSHED STONE

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PS.EC.1 STABILISED LAYERWORKS

The standard Departmental Specification Part EC has been amended with respect to the following items for the purposes of this contract:

PS.EC.1.1 Supporting Specifications

Replace SABS 471 and SABS 626 with SABS ENV 197-1.

PS.EC.1.2 Cementing Agent

The cement used shall conform to SABS ENV 197-1 and shall be classified as either CEM II/A-S 42.5 or CEM III/A 32.5 respectively.
Payment for the stabilising agent shall be included in the rate tendered for the cement treated stabilized graded crushed stone layer, Section 4-Part DA-Item 2. The rate tendered shall also include full compensation for providing the stabilising agent at the works, irrespective of the rate of application specified or ordered and shall allow for the variation of mixing and compaction times of the various stabilising agents.

PS.EC 1.3 Graded Crushed Stone

The material shall conform to the requirements for a **G4** or better material as described in TRH 14:1985 and shall be free of shale or weathered dolerite materials. The following additional requirements shall also be met:

Before stabilising :-

Percent passing 0.425 mm sieve (TMH1-A1)	Max. 15
pH (of fines passing 0.425 mm sieve)	Min. 6

After stabilising :-
Plasticity Index (TMH1-A3) after treatment Max. 6

UCS (7 day) @ 100% Mod. AASHTO
(TMH 1-A14) Min. 1.5 Mpa
Max. < 3.0 MPa

ITS (TMH1-A16T) Min. 250 kPa
Cement content Min. ICL value or 2% by mass of raw material - whichever is greater
Max. 5% by mass of raw material.

PS.EC.1.4 Application

The first paragraph of Clause EC 5.2 shall be replaced with the following :

The rate of application of the stabilising agent when applied by mechanical bulk-spreading equipment and measured by the canvas-patch method, shall be equal to the specified rate of application not greater than 5% of the rate of application, and no single measurement shall show a value deviating by more than 20% from the specified rate.

PS.EC.1.5 Watering

Further to the requirement of Clause EC 5.4, the moisture content of the stabilised material shall not exceed 80% of the saturation moisture content of the unstabilised material at maximum dry density. Any portion of the work that exceeds this requirement shall be dried and restabilised to the required stabiliser content.

PS.EC.1.6 Testing

Paragraph 1 of Part (a) shall be replaced with the following:

The Contractor is to provide a mix design proposing a stabiliser content proving compliance with the requirements of Clause EC 3.2 using the material he intends using. The mix design shall include an ICL test which will be used to establish the minimum stabiliser content. The final cement content shall be subject to the Engineer’s approval.

Further to Item (b) the following additional acceptance test requirements shall apply:

The uniformity of application of the stabiliser shall be ascertained by retrieving a minimum of 10 samples selected randomly over the extent of the works and establishing the stabiliser content of the samples. The samples shall be retrieved immediately before compaction (after the stabiliser has been mixed with the parent material). Not more than 10% of the test results shall fall below the specified stabiliser content and the coefficient of variation of the stabiliser content should be less than 30%. No single measurement shall deviate from the specified rate by more than $\forall$ 30% of the specified rate.

The following item is to be included under Part EC.5 construction:

PS.EC.1.7 Trial Layer

Prior to the commencement of paving of the layer the Contractor shall construct a section of trial layer to demonstrate his capability of constructing the layer in accordance with the specifications. The trial layer shall be constructed with the same materials, mix proportions and equipment as the Contractor intends using for the main layer.

A trial section of not less than 150 m^2 shall be submitted for approval. The Engineer shall also have the right to call for a new trial section at any stage of the contract when, in his opinion, changes by the Contractor in the approved equipment, materials, mix or plant warrant such a procedure.

The Contractor may, unless advised of any deficiencies in the trial layer, proceed with the main layer from a time ten days after the completion of the trial section or such earlier time as the Engineer may allow. In the event of deficiencies in the trial layer, the Engineer may order the Contractor to construct further trial sections until a satisfactory section is achieved. The Contractor may then proceed with the main layer from a time ten days after the successful completion of the satisfactory trial section.
An item has been provided in the BOQ for the trial layer section.

PS.ED ROAD ASPHALT

INDEX

PS.ED.1 SMOOTHNESS APPLICABLE TO WEARING COURSE (Clause ED.6.2)

The smoothness applicable to the wearing course shall be that specified in this clause and not as in Clause ED 6.2(b). A Category "A" Road is required for all roads constructed under this contract.

(1) The smoothness of the pavement will be determined by using a profilograph and the surface finish shall be tested in accordance with the following specification.

The profile index will be determined using a California type profilograph furnished and operated by the Engineer in the presence of the Contractor. The profilograph shall be moved longitudinally along the pavement at a speed no greater than 5 kph and shall record the surface profile at full scale vertically. The results of the profilograph test will be evaluated as described in the metricated version of Test No. Calif. 526-D.

The Contractor shall furnish paving equipment and employ methods that produce a riding surface having a profile index of 300 mm per kilometre or less for category "A" Roads and 500 mm per kilometre or less for Category "B" Roads. The profile measurements will start 10 m and will terminate 20 m from each bridge approach pavement or existing pavement that is joined by the new pavement in the direction of placement.

Two pavement profiles will be taken of each day's production and the Profile Index shall be defined as the average of the two profiles. The position the profiles are taken will be either on the centre line of each planned traffic lane, if two traffic lanes are paved, or in the wheel paths of the traffic lane (i.e. 1 m from each edge) if only one traffic lane is included in the paved width.

A daily average profile index shall be determined for each day's paving and a profile index of each day's production shall be established as soon as possible. A day's paving is defined as a minimum of 0,1 km of pavement placed in a day. If less than 0,1 km is paved, the day's production will be grouped with the next day's production.

(2) Rectification

The full depth of the layer shall be removed and replaced with fresh material laid and compacted to specification.

Where the surface level is too high or too low the area rectified shall be not less than one lane wide and at least 15 m long for wearing course.

Where the number of surface irregularities exceeds the specified limits the area to be rectified shall be 100 m long and not less than one lane wide.

PS.ED.2 RESTRICTION ON PLACING OF ASPHALT

The Contractor shall, wherever possible, complete the earthworks and compaction to sidewalks prior to the laying of the wearing course on the adjacent section of road so as to prevent construction plant and equipment from damaging the freshly laid wearing course.

PS.ED.3 PATCHING OF EXISTING SURFACE

Where existing roads are to be patched, or prior to resurfacing existing roads, those areas of the existing asphalt pavement which require patching will be marked by the Engineer.

PS.ED.3.1 CONSTRUCTION

In the areas to be patched the in-situ asphalt surfacing shall be removed to a depth of 100 mm. The sides shall be cut vertically with the edges square. The exposed surface shall be swept of all loose material, a tack coat applied to the bottom and sides and then patched with asphalt base course. After compaction the surface of the patch shall be flush with the adjacent road surface.

PS.ED.3.2 MATERIALS

The asphalt base course shall comply with the requirements of Part ED : Road Asphalt.

PS.ED.3.3 Measurement and Payment

The unit of measurement shall be the square metre (m^2) and the rate shall include for removal of the in-situ layers, trimming the sides, compaction, application of the tack coat, supply and laying of the asphalt, loading and haulage to the tip of excess material.

PS.ED.4 LAYING OF ASPHALT

(a) The Contractor shall provide the Engineer with the name of the asphalt Sub-Contractor before asphalt is laid.

The asphalt shall be laid by an approved paving machine. Hand-laying shall be permitted at the Engineer's discretion when the area involved is small. The asphalt shall not be laid if its temperature is below 140 °C.

The asphalt shall be rolled in accordance with the method described in chapter VI of the Asphalt Institute Paving Manual (MS-8). A final density is required of at least 96% of the Marshall density of the mix.

An acceptance certificate for this layer will be issued by the Engineer's inspector when all requirements have been met.

(b) Further to Clause ED.8.1, the rate tendered shall include for all extra work required to lay and compact the asphalt base and make-up courses in restricted areas.

PS.ED.5 LONGITUDINAL/TRANSVERSE JOINTS

Tenderer's are to note that the tendered rate per Section 4 Part ED Item 4 are not to include for saw cutting. If the Engineer requires the joint to be saw cut, the saw cutting to the longitudinal joint and transverse joint will be paid for under Section 4 Part ED Item 6 or 7 as an extra over.

A longitudinal joint is to be formed by cutting into the existing road surface by a width of 150 mm to a depth of 50 mm where the new surface is to be tied longitudinally into the adjacent existing pavement. The position of the joint shall be indicated by the Engineer on site. After cutting / milling the joint shall be swept of all loose material and painted with a tack coat.

Cutting of the joints shall only take place immediately prior to the laying of the wearing course.

The unit of measurement shall be linear metre (m). The rate tendered shall cover the neat cutting of the joint, the cutting of the additional 150 mm step into the existing adjacent asphalt base layers and the removal of all the old asphalt to tip off site inclusive of haulage.

PS.ED.6 SAW CUT TO LONGITUDINAL AND TRANSVERSE JOINTS

The saw cut shall be cut with a diamond cutter to a neat uniform line 50 mm deep along the edge of the existing road where directed by the Engineer.

The unit of measurement for the saw cut shall be linear metre (m) and the rate shall cover the overall depth of cut.

PS.ED.7 MILLING OF ROAD SURFACE

Milling of the existing road surface shall be carried out to either reduce levels, to remove unsuitable asphalt layers or to salvage the existing asphalt, as shall be directed by the Engineer.

PS.ED.7.1 METHOD OF WORK

The areas to be milled and the depths of asphalt to be removed shall be indicated either on the drawings or by the Engineer on site. Where it is necessary to maintain traffic over the milled areas the planing shall be programmed to take place immediately prior to the asphalting operation.

The milled material shall be spoiled at the Phoenix Depot and Malaca Road Depot in Durban North. This shall be directed by the Engineer.

After milling, the area shall be swept of all loose material and a tack coat applied at a rate of 0,3 l/m² following which the replacement asphalt shall be laid. On no account shall traffic be permitted to run on the milled surface.

In areas where the existing road base is disturbed by the milling operation, the surface of the base shall be recompacted with static compactive equipment. These areas shall then be primed with MC 30 or MSP 1 applied at a rate of 0,6 l/m². Only after the curing period shall the asphalt be laid.

In certain instances, the Engineer may direct that the disturbed road base be removed and replaced with graded crushed stone or cement treated graded crushed stone.

It is envisaged that the approach and exits to the underpass on the M41, on both carriageways, will be milled to allow for the grading-in of new levels

PS.ED.7.2 MEASUREMENT AND PAYMENT

(1) Milling

The unit of measurement shall be square metre (m²). The rates shall include the hire of the milling machine, loading and transporting the milled material to a Municipal Depot and sweeping of the surface. In addition, allowance shall be made for working around manhole and valve covers.

(2) Recompacting and Priming of Road Base

The unit of measurement shall be the square metre (m²) and shall be measured extra over to the above item. The rate shall cover the plant and labour required to complete the operation as specified and shall include the supply and application of the prime coat.

PS.ED.8 ASPHALT REINFORCEMENT

The contractor shall install asphalt reinforcement geofabrics where directed by the engineer. **The unit of measurement shall be the square metre (m²).** The rates shall include the supply and installation of the geofabrics. Tack coat shall be excluded from this item.

PS.ED.9 TECHNICAL SPECIFICATION FOR ASPHALT

The following technical specifications shall replace **only the Material Specifications of Part ED.**

9.1.1. SCOPE

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 NMAS 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 NMAS 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”)

(A “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).

9.1.2. REFERENCES AND STANDARD SPECIFICATIONS

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

9.2. MATERIAL

9.2.1. 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.

9.3. Aggregates

9.3.1. 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).

9.3.2. 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”.

9.3.3. 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.

9.3.4. 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

9.3.5. 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.

9.3.5.1. 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.

9.3.5.2. 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

9.3.5.3. 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

9.4. 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 Speciofications 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: 80 / Pit: 50	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

9.4.1. HOT/WARM MIX ASPHALT MIXES AND DESIGN

9.4.1.1. 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

9.5. 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.

9.5.1. 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.

9.5.1.1. 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

	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)

(a)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%.

	Marshall	Gyratory
	SANS 3001 AS1	AASHTO T 312
Traffic Condition Category	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)

(b)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. VCAmix is the voids in coarse aggregate (>5mm) of the compacted mix.

Note 2. VCAdrc 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.

(c)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.

(d)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.

(e)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.

(a)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 two 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.

(f)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 charateristics
            - 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.

(b) ASPHALT PRODUCTION

(a)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

(b)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 eThekwini 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
		7.1	± 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			± 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.EF KERBS AND HAUNCHES

INDEX

PS.EF.1 KERB AND CHANNEL/FILLET

The kerbing to be used for this contract shall be as follows:

i) Type A Barrier Kerb and Channel/Fillet,

ii) Type A Barrier Kerb and Channel / Fillet – Mini Kerbs for radius less than 2m

iii) Scoop Kerbs and Transition Kerbs,

iv) Figure 12 Edge restraint Kerbs,

v) Transition Kerbs, and

vi) Kassel Kerbs

PS.EF.2 SCABBLE CEMENT STABILISED C2 LAYER FOR KERB FOUNDATION

The rates tendered for kerbs Type A shall be based on the minimum dimensions indicated section C3.4. For the construction of the detail depicted in Standard drawing No.38577, scabbling of the C2 layer is required. This operation shall be paid for separately and the unit of measurement shall be in linear metre (m) and include all the materials, labour and plant necessary undertake this operation and shall include for the scabbling, loading and transporting of surplus material to the approved tip site.

PS.EF.3 EXCAVATION FOR KERB AND CHANNEL/FILLET IN EXISTING ASPHALT LAYERS

The unit of measurement shall be the cubic metre (m^3). The rate shall include all the materials, labour and plant necessary to cut two parallel joints in the existing asphalt the width of the kerb base to be laid, the excavating, loading and transporting of surplus material to the approved tip.

PS.EF.4 KASSEL KERBS

The unit of measurement shall be the linear metre ..... (m).
The rate shall cover the supply of all precast items, including transporting, loading, laying and jointing (including all expansion joints and sealer), cast-in-situ concrete foundation, including mixing, laying, float finishing, setting out of kerb and channel, all supervision, plant, testing, labour, equipment, materials, protection and incidentals necessary to complete the work as specified.
Refer to Annexure C 3.6 for the details of the Kassel Kerb and refer to Standard Drawing No. 38577 for notes relating to kerbs.

PS.EF.5 FIGURE 12 KERBS – EDGE RESTRAINTS

Standard Figure 12 kerbs are to be used at the back of the sidewalk so as to retain the back of the sidewalk.
Refer to Drawing No. 48312. The unit of measurement shall be the linear metre (m).
The rate shall include all the materials, labour and plant.

PS.EG SIDEWALK/MEDIAN AREAS

INDEX

P.S.EG.1 SCOPE

This specification covers the construction of asphalt, precast concrete slabbed and brick sidewalks, footpaths and median areas, vehicular and pedestrian scoops and vehicular access hardening.

P.S.EG.2 INTERPRETATIONS

EG.2.1 Definitions

"Sidewalk" means that portion of a verge intended for the exclusive use of pedestrians;

"Footpath" means a pedestrian way remote from a roadway.

Other definitions for this specification are included in part "AB" : General Specifications.

EG.2.2 Supporting Specifications

The following standards are referred to in the specification:

S.A.B.S.110 of 1973 - Sealing compounds for the building industry, two component, polysulphide base

S.A.B.S 307 of 1972 - Penetration grade bitumen

S.A.B.S 541 of 1971 - Precast concrete paving slabs

S.A.B.S 1305 of 1980 - Sealing compounds for the building industry, one component, silicone - rubber base.

S.A.B.S 0145 of 1978 - Concrete masonry construction all as published in General Notice 463 dated 9 July 1982

S.A.B.S. 1077 of 1984 - Sealing compounds for the building and construction industry, two component

polyurethane – base as published in General Notice 148 dated 1 February 1985

P.S.EG.3 MATERIALS

PS.EG.3.1 Asphalt

Supply or Asphalt for Sidewalk/Median Areas shall be a Sand Skeleton Mix (Sa) and shall meet the specification of **SA-S10 mix design.**

PS.EG. 3.4.1. Bitumen Content:

5,7% ± 0,3% by mass of 40/50 pen. bitumen complying with S.A.B.S. 307

PS.EG.3.2 Graded Crushed Stone

Graded crushed stone shall be as specified in Part EB: Graded Crushed Stone G4 or better.

PS.EG.3.4 Expansion Joints

The sealer used in the expansion joints shall be polysulphide conforming to BS.4252 of 1967 - Two part polysulphide base sealant for the building industry, as amended.

PS.EG.3.5 Grouting of Paving

The grout to be used shall be a Class II mortar complying with SABS 10145: 2013.

PS.EG.3.6 Approved Weed Killer

The rates tendered for paving of sidewalks is to include the weedkiller “Outpace 100GR” or approved equivalent. The use of the weedkiller will be closely monitored on site, applied on formation and after the placing of the paving.

P.S.EG.4 PLANT

Not applicable to this specification.

P.S.EG.5 CONSTRUCTION

For all types of construction the formation to be surfaced shall first be trimmed and compacted to the required tolerance and density.

PS.EG.5.1 Asphalt Areas

These shall consist of a compacted 100 mm thick layer of graded crushed stone (G4 or better) overlaid by a compacted 25 mm thick layer of asphalt (SA-S10 mix design). After the crushed stone has been compacted and tested, a weed killer approved by the Director : Parks shall be applied in accordance with the manufacturer’s instructions. The asphalt shall be manufactured in an approved hot-mix plant and the maximum mixing temperature shall be 170/C. The asphalt shall not be laid if its temperature falls below 130/C in the supply trucks.

PS.EG.5.2 Precast Concrete Slabbed Areas and Paved Areas

Precast concrete slabs shall be laid on a 50 mm mat of 5 MPa cement mortar with a fall as indicated on the drawings with joints positioned to match those of the adjacent concrete kerbstones where applicable. When the area to be paved is curved, the slabs shall be laid in such a manner that the transverse joints shall be radial from the centre of the curve. When applicable, suitable expansion joints 13 mm wide must be left at ± 18,0 m centres to coincide with expansion joints left in the kerbs. The joint shall consist of a compressible material and polysulphide filler. When necessary the concrete slabs shall be cut to size and fitted neatly around existing surface boxes, guard rail posts, etc. Alternatively, for slabs other than exposed aggregate slabs and at the discretion of the Engineer, in-situ concrete coloured to match adjacent paving slabs, may be used. Where directed by the Engineer the Contractor shall fill in narrow strips etc., not exceeding

100 mm in width, unless otherwise approved by the Engineer, with granolithic concrete 50 mm thick, which shall be compacted and trowelled smooth and flush with the adjoining slabs.

PS.EG.5.2.1 Butt Jointed

Joints between the slabs shall not exceed 3 mm and shall be filled by brushing in a Class II mortar complying with SABS 10145: 2013 as the work proceeds. All surplus mortar shall be carefully cleaned from the surface of paving, kerbs, etc., before it sets hard. The cement mortar shall be cured for a period of 3 days.

PS.EG.5.2.2 Gap Jointed

Joints shall be neatly lined up in both directions and shall have a uniform width of 8 mm. When precast concrete slabs are laid in conjunction with brick paving to form an overall paving pattern, joints shall have a uniform width of 10 mm.
Grouting shall be by the wet grouting method. The slabs shall be saturated prior to the application of the grout. The wet sand/ cement grout (mortar class II complying with SABS 10145:2013) shall be placed into joints using a combination of brush and/or squeegee. A fine hose spray shall be used to remove the excess grout from the surface as the work proceeds. Grouted joints shall be finished to a depth of 2 mm to 5 mm below the paved surface. Each days production shall be grouted that same day unless approved otherwise by the Engineer.

PS.EG.5.2.3 Expansion Joints in Precast Concrete Slabbed Sidewalks/Footways

The sealer used in the expansion joints shall be polysulphide conforming to BS.4252 of 1967 - Two part polysulphide base sealant for the building industry, as amended. The joint filler shall be of compressible material approved by the Engineer. Expansion joints, wherever possible, shall be formed using “Jointex” or similar type material laid simultaneously with the paving and sealed as soon as the grout has cured. Where it is necessary to cut expansion joints these shall be cut before paving is extended past the position of the next expansion join. In both cases the joint shall extend through the sand / cement bedding. Expansion joints shall be at +- 7,5m centres or in positions as indicated on the contract drawings or indicated by the Engineer on site.

PS.EG.5.3 SCOOP AND ACCESS HARDENING CONSTRUCTION

The Tenderer's attention is drawn to the various types of pavement construction for the various types of access. The type of construction applicable to a particular scoop shall either be indicated on the relevant drawings or shall be indicated in writing by the Engineer on site.

PS.EG.5.3.1 Asphalt Access Hardening and Scoops

The specification shall comply with the requirements of clause EG.5.1 with the exception that the pavement layer shall be as follows:
(a) Pedestrian: Graded crushed stone 100 mm thick with an asphalt layer 25 mm thick.

(b) Residential: Graded crushed stone 150 mm thick with an asphalt layer 50 mm thick.
(c) Commercial: Graded crushed stone 150 mm thick with an asphalt layer 80 mm thick.
(d) Industrial: Graded crushed stone 150 mm thick.

PS.EG.5.3.2 Concrete Access Hardening and Scoops

Concrete access hardening and scoops shall consist of cast insitu grade 20/13 concrete laid either directly onto the compacted subgrade or onto a graded crushed stone base. The concrete mix, mixing, batching, transporting, placing compaction and curing shall comply with the requirements of part C Concrete Work. The surface of the concrete shall have a wood float finish. Pavement layer for the various scoop types shall be:
(a) Pedestrian and Residential: Concrete 100 mm thick.
(b) Commercial: Graded crushed stone 150 mm thick with concrete 100 mm thick.
(c) Industrial: Concrete 225 mm thick.

EG.5.4 Asphalt Access Hardening and Scoops
The specification shall comply with the requirements of clause EG.5.1 with the exception that the pavement layer shall be as follows:
(a) Pedestrian : Graded crushed stone 100 mm thick with an asphalt layer 25 mm thick.
(b) Residential : Graded crushed stone 150 mm thick with an asphalt layer 50 mm thick.
(c) Commercial : Graded crushed stone 150 mm thick with an asphalt layer 80 mm thick.
(d) Industrial : Graded crushed stone 150 mm thick.

EG.5.5 Concrete Access Hardening and Scoops
Concrete access hardening and scoops shall consist of cast insitu grade 20/13 concrete laid either directly onto the compacted subgrade or onto a graded crushed stone base. The concrete mix, mixing, batching, transporting, placing compaction and curing shall comply with the requirements of part C Concrete Work. The surface of the concrete shall have a wood float finish. Pavement layer for the various scoop types shall be:
(a) Pedestrian and Residential : Concrete 100 mm thick.
(b) Commercial : Graded crushed stone 150 mm thick with concrete 100 mm thick.
(c) Industrial : Concrete 225 mm thick.

PS.EG.6 TACTILE AND DIRECTIONAL PAVING

This clause must be read in conjunction with the following published papers “Position Paper on Tactile Ground Surface Indicators” published by the National Department of Transport in April 2016 and “National Technical Requirement 1: Pedestrian Crossings (NTR1: Part 2)” published by National Department of Transport in December 2016 as well as SANS 784 2007.
Tactile indicators forms part of the vision of creating an infrastructure that is universally accessible to all (SANS 10400 Part S1). This specification applies to the supply and installation of Tactile Ground Surface Indicators (TGSIs) on footpaths, medians, etc designed to provide pedestrians with visual and sensory information.

Raised tactile surface tiles supplied must be designed in accordance with SANS 784 2007 and placed in accordance to National Technical Requirement 1: Pedestrian Crossings (NTR1: Part 2). The two types of TGSIs used are the warning indicators and directional indicators. Refer to Annexure C3.7 for examples of compliant TGSI's.

Samples of all materials to be used shall be approved by the Engineer prior to the commencement of any installation on site. The approved range of samples shall be retained on site by the Engineer and all tiles delivered to site shall be within the tolerance and colour range. These may be warning or directional tiles. A standard tile is 400mm x 400mm in an external pedestrian environment.

P.S.EG.6 TOLERANCES

In all cases formation levels shall be within ± 10 mm of the design levels.

EG.6.1 Asphalt Areas

The average thickness of graded crushed stone shall not be less than 100 mm with a tolerance for any single reading of ± 10 mm. The average thickness of the asphalt shall not be less than 25 mm with a tolerance for any single reading of ± 5 mm. The finished surface levels shall be within ± 7 mm of the design levels.

EG.6.2 Precast Concrete Slabbed Areas

The lateral dimensional tolerance of the precast concrete slabs shall be ± 5 mm, and the thickness tolerance ± 3 mm.The average thickness of the lean mix mortar shall not be less than 50 mm with a tolerance for any single reading of ± 7 mm. The finished surface levels shall be within ± 5 mm of the design levels, with a difference of level between adjacent slabs not exceeding 3 mm.

EG.6.4 Asphalt Access Hardening and Scoops

The average thickness of graded crushed stone shall not be less than that specified with a tolerance for any single reading of ± 10 mm. The average thickness of the asphalt shall not be less that specified with a tolerance for any single reading of ± 5 mm. The finished surface levels shall be within ± 7 mm of the design levels.

EG.6.5 Concrete Access Hardening and Scoops

The average thickness of the concrete shall not be less than that specified with a tolerance for any single reading of ± 10 mm. The finished surface levels shall be within ± 5 mm of the design levels.

P.S.EG.7 TESTING

The Contractor shall supply samples of the precast units, free of charge to the Physical Environment Service Unit, Materials Laboratory, KE Masinga Road, Durban for testing.

The degree of compaction shall be not less that 95% Mod. A.A.S.H.T.O. for the formation, not less that 96% Mod. A.A.S.H.T.O. density for crusher run and not less that 96% of the Marshall density for asphalt.

P.S.EG.8 MEASUREMENT AND PAYMENT

P.S.EG.8.1 Asphalt Areas

The unit of measurement shall be square metres (m²) of completed area and the rate shall cover formation preparation, all necessary compaction, supply and application of weed killer, graded crushed stone, protection of adjacent areas and asphalt laid and compacted.

PS.EG.8.2 PAVING using the 300 x 600 x 50mm precast concrete paver (PS.EG.3.3.1)

The unit of measurement shall be square metres (m^2) of the completed area placed and the rate shall cover formation preparation, all necessary compaction, supply and application of weed killer, 100mm graded crushed stone (G5 or better), supply and filling of joints with Class II mortar, and the supply, placing and compacting of the precast concrete pavers on the cement mortar foundation mentioned in PS.EG.5.2. The contractor shall also include in his rate for the cutting of the tiles inclusive of haulage and royalties. The contractor shall ensure that all surface residues of grouting, mortar, etc are cleaned off following installation.

PS.EG.8.3 PAVING using the 100 x 200 x 50mm precast concrete paver (PS.EG.3.3.2)

The unit of measurement shall be square metres (m^2) of the completed area placed and the rate shall cover formation preparation, all necessary compaction, supply and application of weed killer, 100mm graded crushed stone (G5 or better), supply and filling of joints with Class II mortar, and the supply, placing and compacting of the precast concrete pavers on the cement mortar foundation mentioned in PS.EG.5.2. The contractor shall also include in his rate for the cutting of the tiles inclusive of haulage and royalties. The contractor shall ensure that all surface residues of grouting, mortar, etc are cleaned off following installation.

PS.EG.8.4 PAVING using the 450 x 450 x 50mm precast concrete paver (PS.EG.3.3.3)

The unit of measurement shall be square metres (m^2) of the completed area placed and the rate shall cover formation preparation, all necessary compaction, supply and application of weed killer, 100mm graded crushed stone (G5 or better), supply and filling of joints with Class II mortar, and the supply, placing and compacting of the precast concrete pavers on the cement mortar foundation mentioned in PS.EG.5.2. The contractor shall also include in his rate for the cutting of the tiles inclusive of haulage and royalties. The contractor shall ensure that all surface residues of grouting, mortar, etc are cleaned off following installation.

PS.EG.8.5 PAVING using the 400 x 400 x 50mm Tactile and Directional Paving (PS.EG.3.3.4)

The unit of measurement shall be square metres (m^2) of the completed area placed and the rate shall cover formation preparation, all necessary compaction, supply and application of weed killer, 100mm graded crushed stone (G5 or better), supply and filling of joints with Class II mortar, and the supply, placing and compacting of the precast concrete tactile ground surface indicators on the cement mortar foundation mentioned in PS.EG.5.2. The contractor shall also include in his rate for the cutting of the tiles inclusive of haulage and royalties. The contractor shall ensure that all surface residues of grouting, mortar, etc are cleaned off following installation.

PS.EG.8.6 Concrete cast in-situ bullnose

The unit of measurement shall be square metres (m^2) of the completed area constructed. The rate shall cover formation preparation, all necessary compaction, supply and application of weed killer, supply, placing and compacting of Concrete 25/19 MPa, and any shuttering and formwork required.
The rate shall also include for a wood float finish to all horizontal surfaces and a steel float finish to all vertical surfaces. The contractor shall ensure that all surface residues of concrete cleaned off following construction.

PS.EG.9 160 mm DIAMETER P.V.C. SIGN SLEEVE

The 160 mm diameter P.V.C. sign sleeve shall be 700 mm deep and have 25 mm show above finished paved area. The unit of measure shall be number (No.) and the rate shall include for excavation, supply and placing of the sleeve and backfilling.

PS.EG.10 APPROVED WEED KILLER

Wherever mentioned, the approved weed killer shall be “OUTPACE 100GR” or approved equivalent.

PS.EG.11 SCOOP AND ACCESS HARDENING CONSTRUCTION

The Tenderer's attention is drawn to the various types of pavement construction for the various types of access. The type of construction applicable to a particular scoop shall either be indicated on the relevant drawings or shall be indicated in writing by the Engineer on site.

PS.EL DUMPROCK SUBGRADE IMPROVEMENT

INDEX

PS.EL.1 DUMPROCK

Refer to Departmental Specifications Part EL – 'Dumprock Subgrade Improvement'

Amend clause EL.5 to read as follows:

Dumprock shall be spread and levelled such that when compacted it is at the specified thickness and levels. Compaction of the layer shall continue until movement of the material under the compactor becomes negligible or for a maximum of 10 passes of the roller whichever occurs first. Dumprock shall be vibrated under a 10/12 ton drum vibratory roller during compaction. Concrete for blinding shall then be applied in a blanket over geo-fabric over the full width of the layer.

The unit of measurement shall be the cubic metres (m3) of completed Dumprock layer. The rate shall cover the supply, loading, transporting, dumping, spreading of all materials and all processing of the layer and proof rolling, all as detailed in construction drawings or as instructed by the Engineer.

PS.EL.2 ROCKFILL MATERIAL

Refer to part EL of the Standard Engineering Specifications and clause PS.EL.1 of the Project Specifications in this document for construction specifications.

Dumprock as defined below is to be used for a pioneer layer for sub-grade improvement as shown in construction drawings and as directed by the Engineer.

Clause EL.3 shall be amended to read as follows;

The dumprock shall consist of fresh to slightly weathered ungraded waste rock from mining activities, blasting or rock excavation. Shales, slates or other laminated mudrocks shall not be accepted.

Dumprock shall have a maximum size not more than two-thirds of the compacted thickness of the layer. The rock shall otherwise be ungraded but shall contain less than 10% passing the 37.5mm sieve when spread on site.

Dumprock shall have a minimum 10% FACT value of 100kN when dry and 40kN when tested drained after 24 hours soaking.

A G5 void filler capping layer shall then be spread in a blanket layer over the full width of the pioneer layer.

PS.F PROTECTION WORKS

PS.F.1 DRAINAGE GRADE GEOFABRIC

One layer of grade 2 filter fabric shall be placed where indicated on the drawings or instructed by the Engineer. The material shall be placed, in accordance with the instructions, in strips with a minimum overlap of 300mm at the joints, and shall be properly fastened to prevent any movement or slipping while the gabions or dumprock are being placed.

The unit of measurement shall be the square meter of area covered with filter fabric placed in position (m2).

The tendered rate shall include full compensation for supplying the filter fabric (materials), labour, equipment, cutting, and waste, placing, joining, overlapping and securing / installing the material in position.

PS.F.2 TOPSOILING

PS.F.2.1 MATERIALS

The soil shall be loamy with a well-defined crumb structure, neither too sandy nor too clayey. It shall contain evidence of fibrous plant roots and shall be free from perennial weed root stocks, stones, glass, metallic and plastic substances.

The imported topsoil shall be obtained from a source approved by the Director: Parks.

A 1kg sample of the topsoil shall be submitted for approval to the Engineer 4 weeks prior to the top soiling operation.

PS.F.2.2 MEASUREMENT AND PAYMENT

The unit of measurement shall be the square metre (m2). Further to clause F.8.1 and F.8.2, the rate shall include for the purchase, supply, transport, mixing, distributing, spreading, trimming and finishing of the topsoil and compost mixture.

PS.F.3 EARTH REINFORCEMENT

Earth reinforcement shall be carried out by installing Rockgrid PC or similar approved. Rockgrid PC reinforces and stabilize aggregate materials and soils. Earth reinforcement shall be installed as indicated in construction drawings and as directed by the Engineer. All earth reinforcement shall be installed as per manufacturer's instruction. The overlap of the geo mats shall be as per manufacturer's instructions or not be less than 600mm, whichever is greater.

Backfilling onto structures shall be carried out in accordance with the provisions of Part DD Specification for 'Earthworks for Structures.'

The unit of measurement shall be the square metre (m2) of rockgrid earth reinforcement supplied and installed. The rate shall cover for the purchase, supply, transport and installation of earth reinforcing mats.

PS.F.4 EROSION PROTECTION

Embankments beyond the culvert shall be protected from erosion by placing ‘Maccaferri Biomac C’ or similar approved rolled erosion control protection. Erosion control protection blankets shall be laid as per manufacturer’s instructions as indicated in construction drawings or as directed by the Engineer.

The unit of measurement shall be the square metre (m2), in plan, of erosion control protection blankets installed. The rate shall cover the supply, transportation, working and installation of the blankets.

PS. J PILLING

INDEX

PS.J.1 SHEET PILING

Sheet piling shall be carried out in accordance with the departmental Specification Part J – Piling.

The contractor's attention is brought to clause PS.C.17 "Demolishing existing concrete" of the document. Unless instructed otherwise by the Engineer, the contractor shall use the existing wingwalls as lateral support during excavations and construction of the new culvert base extension and backfill against the wingwalls on completion with an approved backfill. Excavations, backfilling and compacting shall be carried out in accordance with the provisions of the Departmental specification Part DD and Project specification DD. If a written instruction to demolish the existing wingwalls has been given by the Engineer, this clause and any provisions made in the Bill of Quantities under Part J shall come into effect. Provisional sum items have been made in the BOQ for measurement and payment.

PS.PG NON PRESSURE PIPELINES AND PC CULVERTS

INDEX

PS.PG.1 CONCRETE SEWER/STORMWATER PIPES

Concrete pipes shall be class 100D or 75D, as detailed in the drawings and schedules. No independent design is required. These pipes shall comply with Departmental Specification Part PG.3.4.2 and shall in addition to this sewer pipes shall have a 19mm thick calcium alumina cement (C.A.C) Lining.

The concrete pipes shall be jointed by means of a spigot and socket joint with a rubber sealing ring.

In addition to a rubber sealing ring the inside face of the joint shall be sealed with a Bitu- joint@ sealant or an approved equivalent.

Failed joints will be redone to the satisfaction of the Engineer.

PS.PG.2 MEASUREMENT AND PAYMENT (PIPELINES)

The unit of measurement shall be linear metres (m). The unit rate for supply shall include for:

- The supply of all pipes complete with couplings and joint material.
- Their inspection, transport to and about site and all handling costs.

The laying, jointing, building pipes into manholes including extrusion welding of water stop/building up where applicable, all cutting preparation and wastage of materials.

Testing as per Clause PG.7 and cleaning of pipe lines.

PS.PG.3 BUILDING PIPES INTO MANHOLES (Clause PG 5.5)

The joints on pipes built into manholes for the sewer reticulation shall be located in accordance with the provisions of Clause PG 5.5 and not Clause PG 5.3.1 (d).

The new pipes will have to be connected to the existing trunk sewer in the connection chambers which are to be constructed over the existing trunk sewer. The benching operation of these chambers is to carried out between the hours 23h00 and 06h00 to minimise sewage flow control.

The unit of measurement for building pipes into manholes shall be number (no). The rate is to include for the supply of all labour, equipment and materials required for setting the new pipe to the correct level, making good manhole wall and the disposal of all unsuitable or surplus material as well as flow diversions.

PS.PG.4 SUBSOIL PIPES

The following clause shall replace Clause PG.3.5.

"These shall be "Netlon" plastic subsoil pipes complying with SABS 791 as amended.

Hole Size : 5 ∀ 1 mm Diameter
Diameter of Pipe: 100 ∀ 10 mm.
Pipe Invert : 25% of the circumference of the pipe is to be free from slots or holes to form an invert to the pipe."

PS.PG.5 SUBSOIL DRAINS AND OUTLETS

Subsoil drains shall be type B or C as detailed on standard drawing No. 38575.

Subsoil pipes shall be "Netlon" plastic pipes conforming to SABS 791 or the new Flo Drain system. The outfall end of each run of subsoil drain shall be built into the nearest inlet/manhole or headwall in accordance with Clause PG 5.5, or into a special outlet structure as detailed on the project drawings and measured under part PH.

PS.PG.5.1 CONNECTION OF SUBSOIL DRAINS TO EXISTING STORMWATER SYSTEM

Where subsoil pipes require to be built into an existing stormwater inlet/manhole or headwall, the unit of measurement shall be number (No.)

The rate tendered shall include for all labour and materials to construct the connection in accordance with Clause PG.5.5. and for trimming the geofabric at the connection.

PS.PG.5.2 SUBSOIL TERMINATION STUB

The final 1 metre length of the subsoil drain before the manhole/catchpit shall be 100 mm diameter non-perforated U.P.V.C. pipe. The unit of measurement shall be number (No.). The rate shall include for the supply and laying of the pipe, and for all work necessary to tie into the stormwater manhole/catchpit.

PS.PG.6 STONE FOR SUBSOIL DRAIN FILTER

The following clause shall replace Clause PG.3.10.

"The stone aggregate used for the subsoil drain filter shall consist of 9,5 mm crushed stone conforming to the following grading :

Sieve size mm	132	95	67	475	236
% Passing	100	85 - 100	0 - 55	0 - 25	0 - 5

"

PS.PG.7 RIVER SAND BACKFILL FOR SUBSOIL DRAIN FILTER

The following clause shall replace Clause PG.3.11.

"River sand for subsoil drain filter shall consist of clean river sand conforming to the following grading :-

Sieve size mm	67	475	150	75
% Passing	100	90 -100	0 - 15	0 – 3

and having a Fineness Modulus of 2,0 - 3,5."

PS.PG.8 GEOFABRIC BLANKET

The geofabric shall comply with Clause PG.3.8 and the rate tendered shall include for wrapping the geofabric around either the subsoil pipe, subsoil drain or stone bedding.

PS.PG.9 CONCRETE ENCASEMENT OF DUCTS UNDER CARRIAGEWAYS

Further to Clause PG.8.11.2 the Contractor shall note that concrete grade 20 / 26 shall be used for all duct encasement.

PS.PG.10 BRICK HEADWALLS TO DUCTS

Ducts shall have brick headwalls constructed at each end of the ducts, as shown on standard Drawing No. 38581. Bricks for these headwalls shall be selected good quality clay commons. Mortar shall conform to mix Class A as defined in the latest edition of the Standard Building Regulations. Construction of brickwork shall be as specified in Clause F.5.6.3.

PS.PG.11 SAND / CEMENT MIX BACKFILL TO DUCTS

Rate is per cubic metre (m;) of backfill, (payable up to pay trench width). The rate shall include for the supply of clean coarse granular sand, including all haulage, supply and mixing of cement to the sand in a 1 cement : 10 sand ratio, placing and compacting of the backfill.

PS.PG.12 CABLE DUCT MANHOLES

Cable duct manholes shall consist of 230mm thick brickwork to an external plan dimension of 790x790 on a 200mm thick class 20/26 concrete base. Manhole lid and frame shall be heavy duty concrete – 150mm thick.

PS.PG.13 KAY-TECH FLO-DRAIN OR SIMILAR APPROVED

The Kaytech Flo-Drain or similar approved subsoil drain may be used as an alternative to the conventional subsoil drain system. The Flo-Drain comprises of three elements, ie. geofabric, Flo-net and Flo-drain pipe. The contractor is to combine these elements to make up the Flo-drain. The rate of measurement will be per linear metre (m) and will be for the supply and installation of the system. The excavation and backfill to the Flo-Drain will be paid elsewhere.

PS.PH MANHOLES AND APPURTENANT DRAINAGE WORKS

INDEX

PS.PH.1 MANHOLES AND INLETS

Tenderers are to note that manholes and inlets shall be measured according to type and varying depth only. The rate tendered for the manholes/inlets shall include for the different pipe sizes and benching configurations.

The Contractor shall note that the rate for inlets shall include the cost of the graded channel in front of the inlet and / or splay and the cost of the transition kerb and channel upstream and downstream from each inlet. This will not form part of the payment for kerb and channel.

PS.PH.2 MANHOLES AND APPURTENANT WORKS : REVISED DRAWING NUMBERS

Clause PH.3.2.1.1 second paragraph is replaced by the following:

Details of the precast concrete components of standard manholes are shown on standard drawings in section C3.4 for both foul-water sewers and stormwater drains.

Clause PH.5.11 first paragraph:

Standard drawing 21701 is replaced by drawing 38574.

PS.PH.3 BRICKS

Clause PH.3.1 first paragraph shall be replaced by the following:

"Burnt clay masonry units for foul-water and stormwater sewer manholes, stormwater inlets and inspection chambers shall be Non-Facing Extra (NFX) with a nominal compressive strength of 14 MPa to S.A.B.S. 227:1986.

PS.PH.4 INLET AND OUTLET HEADWALLS

Details of outlet headwalls are indicated in section C3.4. The unit of measure for these headwalls shall be Number (No.) and shall include for all labour, plant and materials required for the construction of the headwall inclusive of the base and cut-off walls.

The construction of brickwork shall be as specified in Clause F.5.6.3. Mortar shall conform to mix Class A as defined in the latest edition of the Standard Building Regulations.

PS.PH.5 CONSTRUCTION OF MANHOLE / INLET OVER EXISTING STORMWATER PIPE

The unit of measurement shall be Number (No.).

Further to Clauses PH.8.2 and PH.8.3 the rate shall include for :

(a) Breaking into the existing pipe.
(b) Cutting and reinstating the ends of the existing pipe.
(c) The restricted working around the existing pipe.
(d) Disposal of any spoil etc., to the tip.

PS.PH.6 BREAK INTO EXISTING BRICK MANHOLE/INLET FOR STORMWATER PIPE

The unit of measurement shall be Number (No.). Separate items have not been scheduled for each diameter of pipe to be connected to a manhole. The unit rate for breaking into a brick manhole to connect a stormwater pipe shall include for all the materials, labour and plant necessary for:

(a) The breaking into the existing manhole, including the demolition of the benching necessary to accommodate the pipe.
(b) The building in of the stormwater pipe, including the re-shaping and making good of benching and the disposal of all resultant rubble to approved tip.

PS.PH.7 CONVERT EXISTING MANHOLES TO INLETS

Where indicated, existing manholes shall be converted to standard inlets as shown in section C3.4. The unit of measurement shall be number (No.) and in addition to the plant, labour and materials required to alter the manhole, the rate shall include for :

(a) removing the existing cover and frame to site for storage;
(b) disposal of any spoil / rubble to tip,
(c) raising/lowering of the inlet cover by 0-300 mm from the original level,
(d) supply and setting of the new inlet covers to the new levels.

Separate items have been included in the Bill of Quantities to cover the different manhole and inlet types.

PS.PH.8 CONVERT EXISTING INLETS TO MANHOLES

Where indicated, existing inlets shall be converted to standard manholes as shown in section C3.4. The unit of measurement shall be number (No.) and in addition to the plant, labour and materials required to alter the inlet, the rate shall include for :

(a) Disposal of any spoil/rubble to tip,
(b) raising/lowering of the manhole cover by 0-300 mm from the original level,
(c) supply and setting of the new manhole covers and frames to the new levels.

Separate items have been included in the Bill of Quantities to cover the different manhole types.

PS.PH.9 BREAK INTO EXISTING BRICK MANHOLE / INLET FOR STORMWATER PIPE

The unit of measurement shall be Number (No.). Separate items have not been scheduled for each diameter of pipe to be connected to a manhole. The unit rate for breaking into a brick manhole to connect a stormwater pipe shall include for all the materials, labour and plant necessary for :

(a) The breaking into the existing manhole, including the demolition of the benching necessary to accommodate the pipe.
(b) The building in of the stormwater pipe, including the re-shaping and making good of benching and the disposal of all resultant rubble to approved tip.

PS.PH.10 ALTERATIONS TO EXISTING MANHOLES AND STORMWATER INLETS INCLUDING RAISING AND LOWERING THE COVERS

Alterations to stormwater structures for this contract may be divided into two categories.

(i) Where the cover is to be raised/lowered and set back less than 300 mm.
(ii) Where the cover is to be raised/lowered and set back a distance of more than 300 mm but less than 800 mm.

In (i) above the Contractor shall be required to demolish a portion of the stormwater structure and corbel the brickwork to support the cover in its new position.

In (ii) above the Contractor shall be required to demolish a portion of the stormwater structure, cast an extension to the base, slab over as required and re-do the brickwork to support the cover in its new position. Details of this work are shown in section C3.4.

PS.PH.11 MANHOLES WITH TYPE S1, S2, S3, D3, D4, D5 AND V2 INLET COVERS

A number of Type "A" and "B" stormwater manholes with various types of inlet covers have been scheduled on this contract. The manholes are schedule by type and in depth increments of 0.5m after the first 1.5m depth from top of manhole.

The unit of measurement shall be number (No.) and the tendered rate for each type shall include for the supply of all labour, plant and materials required to construct the manhole complete in accordance with the Standard Drawings and Specification, and inlet type cover as is specified in the contract drawings.

PS.PH.12 REINFORCED CONCRETE SLAB FOR BLINDING M.H.'S

The supply of the reinforced concrete slab 1 500 mm by 1 500 mm by 250 mm thick for blind manholes is inclusive of shuttering, grade 25 / 26 concrete, and reinforcement steel - Y12 at 250 mm centres both ways).

PS.PH.13 SALBERG/GRID INLETS

A number of Salberg inlets with Polymer Concrete Grids are be constructed into the works. The varying configuration of the Salberg inlets will be specified in the BOQ and will be paid per number (No.). In addition to pay item PH 8.2, the rate shall include for the supply and lay of the Salberg Inlet and polymer grid. The rate shall also include for the excavation of the inlet and the backfill and compaction around the inlet. The rate shall also allow for the connection of the pipe to the inlet at the entry and exit of the Salberg inlet.

The unit of measurement shall be number (No.) and the tendered rate for each type shall include for the supply of all labour, plant and materials required to undertake the works

PS.PQ LATERAL SUPPORT SYSTEM

INDEX

PS.PQ.1 PROTECTION WORKS: RETAINING WALL

Vertical retaining walls are to be used to retain certain areas within the construction site. The type of lateral support system adopted shall be confirmed by the Engineer at a later stage. All materials procured for such works shall be SABS approved as well as approved by the Municipality. Once approved by the Engineer / Employer for use and work has commenced, the approved materials shall be maintained throughout the contract where these walls are required unless the Engineer instructs otherwise .

PS.PQ.1.1 MASS STABILISED EARTHWALL (DRY STACK WALLS)

Supply and Lay TB500's Retaining Blocks or similar, including sliders, as per detail on Construction Drawing.

The unit of measurement shall be square metre (m^2).

PS.PQ.1.2 CEMENT STABILISED FILL

Supply and lay of cement stabilised fill, 5% cement with clean coarse sand well rammed between blocks, in blocks and 500mm behind blocks as detailed.

The unit of measurement shall be the cubic metre (m^3).

PS.PQ.1.3 CONSTRUCT FOUNDATION

Foundations shall be constructed to the dimensions shown on drawings and in conformity with any other requirements detailed on the drawings.

The unit of measurement shall be the cubic metre (m^3).

PS.PQ.1.4 EXCAVATION FOR RETAINING WALL FOUNDATION

The unit of measurement shall be the cubic metre (m^3) and the rate shall include for all materials, labour and plant necessary as specified in Clause DD.5 and DD.8.2.

PS.PQ.1.5 CONSTRUCT WEEPHOLES

Materials and construction shall be as specified in F.5.6.2 of the Standard Departmental Engineering Specifications. The unit of measurement shall be Number (No.) and shall include for all materials, labour and plant required to complete the job as specified in F.5.6.2.

PS.TA ROAD SIGNS

INDEX

PS.TA.1 GENERAL

The Tenderer shall make allowance in the time related rates under Section 1.AB in the Bill of Quantities rates, repositioning, covering/uncovering, relocating or removing temporary signs and other forms of road furniture as required during the progress of the works.

PS.TA.2 ROAD SIGN BOARDS

Further to Item TA.8.1, tenderers are to note that the signs measured under this item are the various types of standard regulatory signs (e.g. stop, yield, keep left etc.).
Notwithstanding the requirements of Clause TA.8.1 the unit of measure shall be number (No.).

PS.TA.3 RE-ERECT ROAD SIGNS

The unit of measurement is number (No.) which shall consist of one pole and one sign.
The rate shall cover the cost of collecting the pole and sign from the site yard and planting of the pole in the PVC sign sleeve or ground, together with compacting the soil around the pole.

PS.TA.4 TEMPORARY ROAD SIGNS

PS.TA.4.1 MATERIALS

All temporary signs shall be manufactured from Chromadek steel plate as detailed under Clause TA.3.3 and retroflective material as follows:

Black	semi-matt finish
Yellow background (with no red material)	Class I
Yellow background (if red material used)	Class II
Red	Class I

With the exception of signs R1, R2, R3, R1.5A and R1.5B, the temporary road signs shall be in accordance with the colour code for temporary road signs.

PS.TA.4.2 ERECTION

The temporary road signs shall be erected in a manner such that the face of the sign is not defaced, obscured or deflected in any way.

Where necessary, for high visibility, the temporary signs shall be erected on 100 mm creosoted gum posts such that the underside of the sign is not less than 2,2 m above ground level. The post/s shall be supported in a drum/s which shall be ballasted and braced or stayed so that the

sign cannot be blown over. In all other instances, the temporary signs shall be adequately secured to a drum.

PS.TA.5 TIMBER POSTS

The timber posts for the temporary sign supports shall be 100 mm diameter creosote gum posts.

PS.TA.6 DRUMS

All drums shall be white painted, 200 litre drums or similar approved by the Engineer. Drums shall not be used for delineation purposes.

PS.TA.7 PROTECTION AND MAINTENANCE

The Contractor shall protect and maintain all road furniture (road signs, delineators, drums, barriers, barricades etc.) throughout the course of the contract and shall be responsible for the cost of replacing any road furniture that may be damaged or stolen.

PS.TB ROAD MARKING

INDEX

PS.TB.1 PLASTIC ROAD MARKING MATERIAL

Further to Clause TB.3.1(c) the plastic road marking material shall comply with the requirements of Specification BS.3262, 1987 Part 3.

(a) The material shall consist of a light-coloured aggregate, pigment and extender, bound together with a thermoplastic resin, plasticised as necessary.

The approximate composition of the material as laid is dependent on the appropriate specification, but for example shall be:

Aggregate	40 parts
Solid Glass Beads	20 parts
Pigment and Extender	20 parts
Binder	20 parts

The proportioning of the various ingredients shall be such that the material, when in a molten state, can be sprayed readily onto the road surface to give an even line of good definition.

(b) Aggregate

The aggregate shall consist of white silica sand, crushed calcite calcined flint, quartz, or other approved aggregate.

(c) Reflectorisation

The solid glass beads incorporated in the mixture shall comply with the Class A category of BS 6088 (1981) that is:

Sieve	% Retained
0,18 mm	0 - 3
0,850 mm	5 - 20
0,425 mm	65 - 95
Below 0,425 mm	0 - 10

Minimum of spherical beads by number 70%

(d) Luminance

The luminance factor of white SPRAYPLASTIC shall be not less than 70.

(e) Flow resistance

The percentage decrease in the height of the cone of SPRAYPLASTIC shall not be more than 25 after testing for 48 hours at 23 C (temperate grade) or 40 C (semi-tropical or tropical grades).

(f) Low Temperature Impact Resistance

SPRAYPLASTIC shall pass the impact test when tested at -10 C (temperate grade) or -1 C (semi-tropical or tropical grades).

(a) Abrasion resistance

The abrasive wear of SPRAYPLASTIC shall typically be less than 0,5 g per 100 revolutions.

PS.TB.2 LETTERING, SYMBOLS AND TRAFFIC ISLAND MARKING

Notwithstanding the requirements of Clause TB.8.1.2, traffic island marking shall be measured under Clause TB.8.1.1 lines.

PS.TB.3 TEMPORARY ROADMARKING

Items have been included in the Bill of Quantities for the provision of temporary road marking using P.V.A. paint.

PS.TB.4 SANDBLASTING

Where directed, the Contractor shall remove existing lane lines and painted islands by sandblasting. The Contractor shall ensure that the method of sandblasting used will not damage the road surface permanently.

The Contractor shall take all necessary precautions to avoid damage to the public traffic during the removal of existing markings.

All loose material remaining on the road after obliteration of markings shall be suitably disposed of to avoid clogging the drainage systems.

The unit of measurement shall be the square metre (m^2). The rate shall include for the successful removal of the paint on the road surface, the continual sweeping and removal of grit and the screening of the sand blasting apparatus to ensure that the dust from the operation does not become a hazard.

PS.TB. 5 PAINTED PRECAST CONCRETE KERBS

The unit of measurement shall be linear metre (m). Separate items have been scheduled for each specified colour and the quantity paid for shall be the actual painted kerb of the exposed front face and the top of the Figure 6 type precast concrete kerb. The kerbs shall be painted alternately in black and white colours where required.

The rate shall include for procuring and furnishing all material, including PVA Road Paint and the necessary equipment, and for painting, protecting, and maintenance as specified.

PS.TB. 6 ROAD STUDS

Five (5) types of road studs / markers will be used on this contract, ie.

i) Solar rechargeable roadstuds,

ii) Uni-directional road studs- Stimsonite or similar approved,

iii) Bi-directional road studs- Stimsonite or similar approved,

iv) Tempered Glass 360 degrees, and

v) Temporary Roads Marker.

The Temporary Road Markers will be used for all temporary works, ie.deviations / detours. The unit of measurement shall be number (No.). The rate shall include for the installation and removal of the markers. They shall be amber and red in colour.

The Permanent Road Studs will be used in the permanent works. They will be of type (i) to (vi) as detailed above. The unit of measurement shall be number (No.). The rate shall include for the supply and installation of the studs. They shall be white, yellow and red in colour

C3.4: PARTICULAR SPECIFICATIONS

In addition to the Standardized and Project Specifications the following Particular Specifications / Policies shall apply to this contract:

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)

C3.4.3 Site Specific Health and Safety Specification in terns of 2014 Construction Regulations 5.1(b)

C3.5: CONTRACT AND STANDARD DRAWINGS

C3.5.1 CONTRACT DRAWINGS / DETAILS

Geometric Design Drawings

- (01) 1T- 48646 Layout Plan
- (02) 1T- 48646 Long Section
- (03) 1T- 48646 Cross Section
- (04) 1T- 48646 Expropriation Plan
- (05) 1T- 48646 Services Layout
- (06) 1T- 48646 Typical Details
- (07) 1T- 48646 Road Markings
- (08) 1T048646 Sequencing Plan

Structural Design Drawings

- 73871.535 Wall E - Long Section, Plan View and Setting Out Line
- 73871.536 Wall E - Reinforcement, Brickwork and Drainage Details
- 73871.550 Wall G - Long Section
- 73871.551 Wall G - Plan and Parapet Layout
- 73871.552 Wall G - Wall Concrete Details 1
- 73871.553 Wall G - Wall Concrete Details 2
- 73871.554 Wall G - Wall Concrete Details 3
- 73871.555 Wall G - Wall Reinforcement Details 1
- 73871.556 Wall G - Wall Reinforcement Details 2
- 73871.557 Wall G - Wall Reinforcement Details 3
- 73871.558 Wall G - Wall Reinforcement Details 4
- 73871.559 Wall G - Wall Reinforcement Details 5
- 73871.560 Wall G - Wall Reinforcement Details 6

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
38582	Precast Concrete Fencing and Aluminium Gates	February	1990
38583	Wire Mesh Fence and Gate Details	February	1990
38584	Standard Hydrant Thrust Blocks and Trenches	February	1990
38585	Water Connections, Pipework and Fittings	February	1990
38586	DP & TC Manholes - Rectangular	February	1990
38587	DP & TC Manholes - “L” Shaped	February	1990
38588	DP & TC Manholes - “T” Shaped	February	1990
38589	DP & TC Cable Ducts and Junction Box Details	February	1990
43120	Typical Details of Grid Inlets	February	1990

C3.6: ANNEXURES

C3.6.1 Baseline Risk Assessment

C3.6.2 Environmental Management Programme

C3.6.3 Geotechnical Report

PART C4: SITE INFORMATION

C4.1 LOCALITY PLAN

The site is located in New Germany, west of Durban CBD.

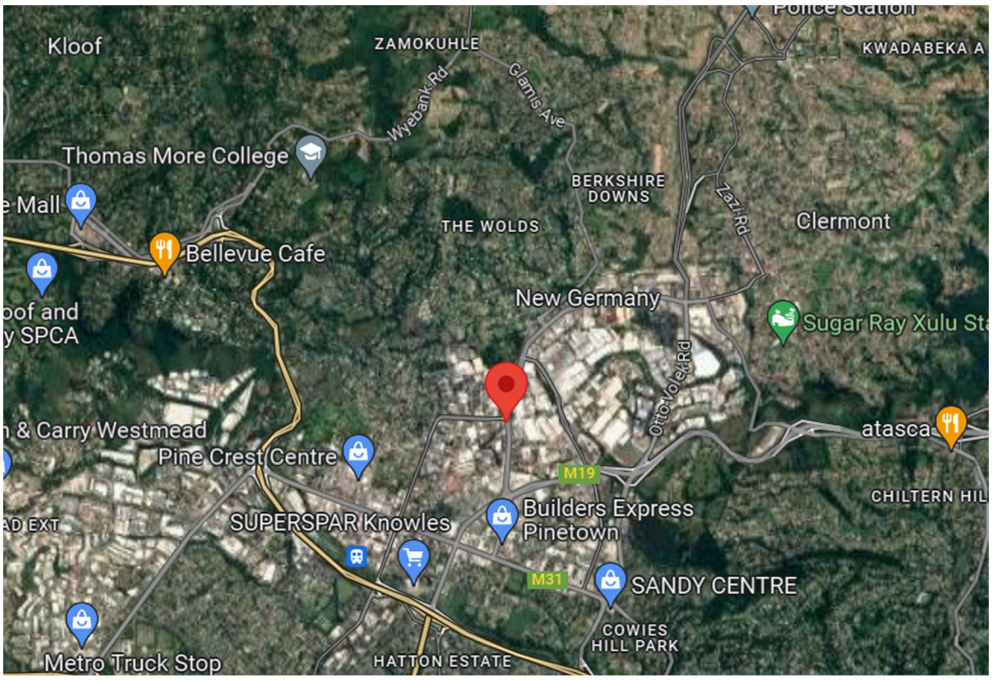

Figure 1: Site Location

C4.2 CONDITIONS ON SITE

The preliminary geotechnical information depicts that the site is underlain by Natal Group Stone intruded by few dolerite dykes and sills.

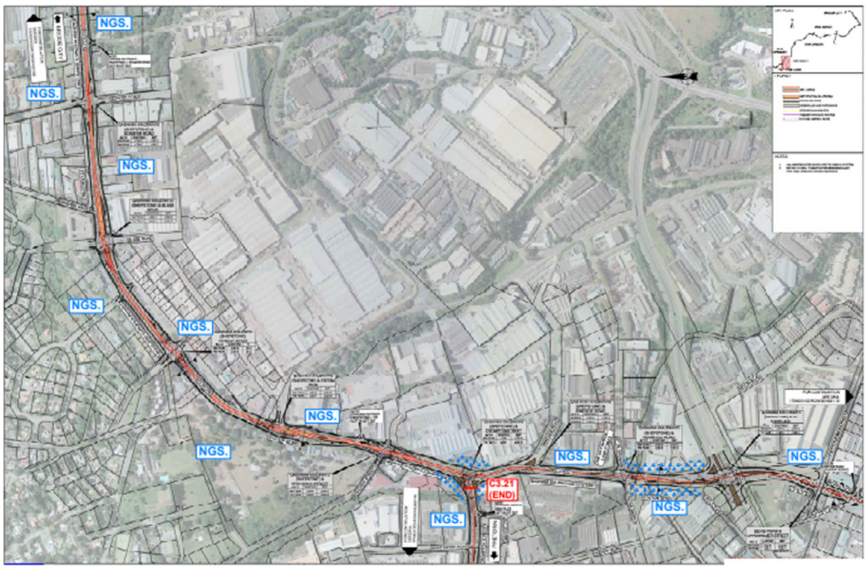

Figure 2: Geology Profile of the site

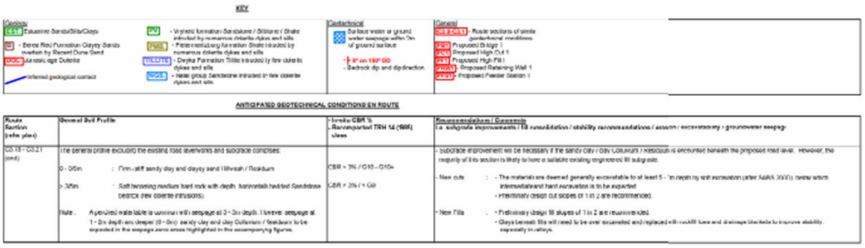

Figure 3: Soil Profile

C4.3 TEST RESULTS

Refer to attached Geotechnical Report