CITY OF CAPE TOWN
ISIXEKO SASEKAPA
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MEMORANDUM OF AGREEMENT

FOR THE

TERM TENDER FOR LAYING OF NEW SEWER MAINS (PANEL TYPE)

MADE AND ENTERED INTO BETWEEN

CITY OF CAPE TOWN METROPOLITAN MUNICIPALITY

AND

QUETZAL TRADING 116 CC

[redacted]

CONTRACT NO: 83Q/2023/24

[redacted]

PREAMBLE

WHEREAS tender 83Q/2023/24 was awarded to **World Focus 226 CC t/a WF Constructions, Quetzal Trading 116 CC, JJ Dyers Construction (Pty) Ltd, Nejeni Construction and Project Management (Pty) Ltd, Exeo Khokela Civil Engineering Construction (Pty) Ltd** in line with the SCM Bid Adjudication Committee resolution **SCMB 36/09/24** dated **09 September 2024** for the TERM TENDER FOR LAYING OF NEW SEWER MAINS, for a contract period from 1 July 2025 for a period of 60 months from date of commencement, subject to a Section 33 of the MFMA process;

AND WHEREAS Prices will be subject to adjustment in accordance with the tender document: in accordance with Clause 6.8.2 as described in the Contract Data;

AND WHEREAS it is recorded that this Contract will be governed by the General Conditions of Contract for Construction Works, Third Edition, 2015 confirmed by the South African Institution of Civil Engineering (SAICE), read with the Contract Specific Data ("CSD") annexed hereto marked **"PART C1.2: CONTRACT DATA".**

NOW THEREFORE THE PARTIES AGREE AS FOLLOWS:

1. PARTIES

The Parties to this Contract are:

1.1. **The City of Cape Town**, a metropolitan municipality, established in terms of the Local Government: Municipal Structures Act. 117 of 1998 read with the Province of the Western Cape: Provincial Gazette 5588 dated 22 September 2000, as amended (**"the Employer"**), herein represented by **City Manager or his nominee** duly authorised hereto;

1.2. **Quetzal Trading 116 CC**, a Close Corporation registered in terms of the laws of the Republic of South Africa with registration no. [redacted] with its principal place of business situated at [redacted] herein represented by its duly authorised representative [redacted] in his/her capacity as [redacted] hereinafter, each a "Party" and together the "Parties".

[redacted]

2. INTERPRETATION

2.1. In the event of any conflict between the provisions of this Contract, the GCC, CSD and any Parts attached hereto, or any other document incorporated by reference to this Contract, save to the extent expressly stated to the contrary, such conflict will be resolved by giving precedence to such different parts of this Contract in the following order of precedence:

2.1.1. first, the terms and conditions of the CSD;
2.1.2. second, the terms and conditions of the GCC;
2.1.3. third, Parts and Annexures to this Contract; and
2.1.4. fourth, any other documents incorporated by reference.

2.2. The provisions of this Contract supersede and replace the provisions of any previous agreement entered into between the Parties relating to the same subject matter.

3. APPOINTMENT AND DURATION

3.1. The Employer hereby appoints the Contractor to perform the Scope of Work for the Employer from **1 July 2025**.

3.2. Unless terminated earlier in accordance with the provisions as set out in the GCC or any other provision in terms of this Contract, **this Contract shall be for a period of 60 months from date of commencement.**

4. MUTUAL GOOD FAITH / CO-OPERATION

4.1. The Parties represent and undertake to do all such things, perform all such acts and take all steps to procure the doing of all such things and the performance of all such acts, as may be necessary or incidental to give effect to the execution of this Contract.

4.2. The Parties shall at all times during the continuance of this Contract observe the principles of good faith towards one another in the performance of their obligations in terms of this Contract.

5. OBLIGATIONS OF THE EMPLOYER

5.1. The Employer undertakes to perform its obligations in accordance with the Contract, including but not limited to the Scope of Work (**PART C3: SCOPE OF WORK**), subject to the satisfactory fulfilment of the obligations by the Contractor as set out in this Contract.

5.2. The Employer shall monitor and evaluate the Contractor's performance in respect of the Scope of Work.

6. OBLIGATIONS OF THE CONTRACTOR

6.1. The Contractor hereby agrees and undertakes to perform the Services to the Employer as set out in Scope of Work (**PART C3: SCOPE OF WORK**).

6.2. The Contractor will perform the Works as expeditiously as possible and furthermore agrees and undertakes to perform the services in accordance with the operational requirements of the Employer.

6.3. The Contractor will ensure that the Works will be of a satisfactory quality and fit for purpose.

6.4. The Contractor shall, ensure that its employees, agents, representatives, sub-contractors and suppliers comply with this Contract and all applicable Laws in the execution of the Works.

6.5. The Contractor will not conduct any activity of whatsoever nature which may be detrimental to the Employer's reputation and goodwill.

7. PRICING DATA

7.1. The Contract Price for the Works shall be as set out in the Pricing Data annexed marked "**PART C2: PRICING DATA**".

7.2. The Contractor shall not be entitled to any other consideration for the rendering of the Works other than as provided for in this Contract.

[redacted]

COMPULSORY ENTERPRISE QUESTIONNAIRE

[redacted]

CITY OF CAPE TOWN

WATER AND SANITATION: DISTRIBUTION SERVICES

CONTRACT NO. 83Q/2023/24

TERM TENDER FOR LAYING OF NEW SEWER MAINS

SCHEDULE 1 : COMPULSORY ENTERPRISE QUESTIONNAIRE

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

Section 1: Name of enterprise: ..... Quetzal Trading 116cc .....

Section 2: VAT registration number, if any [redacted] .....

Section 2a: National Treasury Central Sup[redacted]tabase registration number [redacted] ...

Section 2b: SARS Tax Compliance Status [redacted] .....

Section 3: cidb registration number, if any [redacted] .....

Section 4: Particulars of sole proprietors and partners in partnerships

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

Section 5: Particulars of companies and close corporations

Company registration number . . [redacted] .....

Close corporation number . . . .

Tax reference number . . . .

Section 6: Foreign Bidding Suppliers Is tenderer the accredited representative in South Africa for the Goods / Services / Works offered?	☐Yes ☑No If yes, enclose proof
Is tenderer a foreign based supplier for the Goods / Services / Works offered?	☐Yes ☑No If yes, answer the Questionnaire to Bidding Foreign Suppliers (below)
Questionnaire to Bidding Foreign Suppliers	
a) Is the tenderer a resident of the Republic of South Africa or an entity registered in South Africa?	☐Yes ☑No
b) Is the tenderer a resident of the Republic of South Africa or an entity registered in South Africa?	☐Yes ☑No
c) Does the tenderer havea permanent establishment in the Republic of South Africa?	☐Yes ☑No
d) Does the tenderer have any source of income in the Republic of South Africa?	☐Yes ☑No

[redacted]

e) Is the tenderer liable in the Republic of South Africa for any form of taxation?	☐ Yes	☒ No

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

i) authorizes the Employer to obtain a tax clearance certificate from the South African Revenue Services that my / our tax matters are in order;

ii) confirms that 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 or Database of Restricted Suppliers;

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; and

iv) confirms that the contents of this questionnaire are within my personal knowledge and are to the best of my belief both true and correct.

Signed Eqang Eid Date

Name [redacted] Position [redacted]

Enterprise name Quetzal Trading 116[redacted]

SIGNED ON BEHALF OF TENDERER: .....

[redacted]

[redacted]

CITY OF CAPE TOWN

WATER AND SANITATION: DISTRIBUTION SERVICES

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TERM TENDER FOR LAYING OF NEW SEWER MAINS

C1.1 Form of Offer and Acceptance

Offer

The employer, identified in the acceptance signature block, has solicited offers to enter into a contract for the procurement of:

CONTRACT NO. 83Q/2023/24: TERM TENDER FOR LAYING OF NEW SEWER MAINS

The tenderer, identified in the offer signature block, has examined the documents listed in the tender data and addenda thereto as listed in the returnable schedules, and by submitting this offer has accepted the conditions of tender.

By the representative of the tenderer, deemed to be duly authorized, signing this part of this form of offer and acceptance, the tenderer offers to perform all of the obligations and liabilities of the contractor under the contract including compliance with all its terms and conditions according to their true intent and meaning for an amount to be determined in accordance with the conditions of contract identified in the contract data.

The completed Schedules of Rates (excluding VAT), as contained in Part C2.2 Pricing Data, shall form the tender offer. These rates shall be multiplied, as applicable, by the quantities required in respect of relevant items to develop individual Works Projects to be allocated in accordance with the procedures described in Part C1.2 Contract Data in this Framework Contract document.

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 [redacted] before the end of the period of validity stated in the tender data, whereupon the tende[redacted]ed as the contractor in the conditions of contract identified in the contract data.

Signature(s) .....

Name(s) .....

Capacity .....

for the tenderer

(Name of organization/tenderer) ..... Quetzal Trading 116cc .....

(Address of organization/tenderer) ... [redacted] .....

.....

Name and signature of witness [redacted]

Date 24/4/23

For official use.
INITIALS OF CITY OFFICIALS AT TENDER [redacted]

TO BE COMPLETED AT ACCEPTANCE STAGE

[redacted]

Acceptance

By signing this part of this form of offer and acceptance, the employer identified below accepts the tenderer's offer. In consideration thereof, the employer shall pay the contractor any amounts 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: Agreements and contract data (which includes this framework agreement)
Part C2: Pricing data
Part C3: Scope of work
Part C4: Site information

in Volumes 3 and 5, together with any drawings and documents or parts thereof, which may be incorporated by reference into the above listed Parts.

Deviations from and amendments to the documents listed in the tender data and any addenda thereto as listed in the returnable 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 form of offer and acceptance. No amendments to or deviations from said documents are valid unless contained in this schedule.

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 securities, bonds, guarantees, proof of insurance and any other documentation to be provided in terms of the conditions of contract identified in the contract data. Failure to fulfil any of these obligations in accordance with those terms shall constitute a repudiation of this agreement.

Notwithstanding anything contained herein, this agreement comes into effect on 1 July 2025.The tenderer (now contractor) shall within five working days of the agreement coming into effect notify the employer in writing of any reason why he cannot accept the contents of this agreement as a complete and accurate memorandum thereof, failing which the agreement presented to the contractor shall constitute the binding contract between the parties.

This agreement constitutes a framework contract for the purposes of developing individual Works Projects to be allocated in terms of the procedures described in the contract.

[redacted]

The Parties	Employer	Contractor
Business Name	City of Cape Town	Quetzal Trading 116 CC
Business Registration		[redacted]
Tax number (VAT)	4500193497	
Physical Address	Tower Block, Civic Centre 12 Hertzog Boulevard Cape Town 8001	
Accepted contract sum including tax	Rates based Contract	
Accepted contract duration	1 July 2025 for a period of 60 Months from date of commencement	
Signed – who by signature hereto warrants authority	[redacted]	
Name of signatory		
Signed: Date	10/ 6/25	09/06/25
Signed: Location	Cape Town	Bellville
Signed: Witness	[redacted]	
Name of Witness		

[redacted]

Schedule of Deviations

Notes:

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

1 Subject . .N/A . . . . . .

Details . . . . . .

. . . . . .

. . . . . .

2 Subject . . . . . .

Details . . . . . .

. . . . . .

. . . . . .

3 Subject . . . . . .

Details . . . . . .

. . . . . .

. . . . . .

4 Subject . . . . . .

Details . . . . . .

. . . . . .

. . . . . .

By the duly authorised representatives signing this agreement, 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 returnable schedules, as well as any confirmation, clarification or changes to the terms of the offer agreed by the tenderer and the employer during this process of offer and acceptance.

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

CITY OF CAPE TOWN

WATER AND SANITATION: DISTRIBUTION SERVICES

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TERM TENDER FOR LAYING OF NEW SEWER MAINS

C1.2 Contract Data

Data provided by the Contractor

The name of the Contractor is ..... Quetzal Trading 116cc .....

The address of the Contractor is

Physical Address: [redacted]

Postal Address: .....

Telephone: [redacted]

email:

CONTRACTOR'S ANNUAL HOLIDAY PERIODS DURING CONSTRUCTION PERIOD

Year 1 contractor's annual holiday period	Start date	15/12	End date 15 January
Year 2 contractor's annual holiday period	Start date	15 December	End date 15 January
Year 3 contractor's annual holiday period	Start date	15 December	End date 15 January
Year 4 contractor's annual holiday period	Start date	15 December	End date 15 January
Year 5 contractor's annual holiday period	Start date	15 December	End date 15 January.

[redacted]

C1.2 Contract Data

Part 1: Contract Data provided by the Employer

GENERAL CONDITIONS OF CONTRACT

The following standardised General Conditions of Contract:

General Conditions of Contract for Construction Works, Third Edition, 2015

prepared by the South African Institution of Civil Engineering (SAICE) shall apply to and form the General Conditions of Contract for this contract. Copies of these conditions of contract are obtainable from the South African Institution of Civil Engineering (SAICE), Private Bag X200, Halfway House 1685, Tel: (011) 805 5947, Fax: (011) 805 5971, e-mail: civilinfo@saice.org.za.

Copies of the General Conditions of Contract are available for inspection and scrutiny at the offices of the Employer.

The Pro-formas bound with the General Conditions of Contract 2015, on pages 96 to 113 shall not apply to this Contract and shall be replaced with the documentation bound into this Contract Document.

The General Conditions of Contract make several references to the Contract Data for specific data, which together with these conditions collectively describe the risks, liabilities and obligations of the contracting parties and the procedures for the administration of the Contract. The Contract Data shall have precedence in the interpretation of any ambiguity or inconsistency between it and the general conditions of contract.

The General Conditions of Contract shall be read in conjunction with the variations, amendments and additions set out in the Contract Specific Data below. Each item of data given below is cross-referenced to the clause in the General Conditions of Contract to which it mainly applies.

The documents forming the Contract are to be taken as mutually explanatory of one another. For the purposes of interpretation, the priority of the documents shall be in accordance with the following sequence.

a) the Form of Offer and Acceptance,
b) the Contract Specific Data within the Contract Data,
c) the General Conditions of Contract for Construction Works, Third Edition, 2015,
d) the Drawings,
e) the Scope of Work,
f) the Pricing Data, and
g) the conditions of tender, the tender data and tender schedules.

If an ambiguity or discrepancy is found in the documents, the Employer's Agent shall issue any necessary clarification or instruction.

CONTRACT SPECIFIC DATA

The following contract specific data, referring to the General Conditions of Contract for Construction Works, Third Edition, 2015, are applicable to this Contract:

Clause 1.1.1.2:

Add the following after "Bill of Quantities":

, also referred to as Bills of Quantities,

Clause 1.1.1.7:

Add the following after "Contract" and before "means":

, also referred to as Framework Contract or term tender contract,

Add the following after "Acceptance,":

including, if applicable, the Form of Offer and Acceptance in a Works Project contract document, in which case "Contract" includes the Works Project contract,

Clause 1.1.1.11:

Add the following after "Acceptance":

... of a Works Project.

The Contract Sum for each Works Project shall not exceed R10 million (including contingencies and VAT).

Clause 1.1.1.13:

The Defects Liability Period is **12** months per Works Project.

Clause 1.1.1.14:

Delete "Commencement Date" and replace with:

date specified in the Works Project contract for commencement with Works execution,

The time for achieving Practical Completion, inclusive of non-working days referred to in Clause 5.8.1 below, but exclusive of special non-working days (Clause 5.8.1), will be determined for each Works Project as specified in the Works Project contract document.

Clause 1.1.1.15:

The **Employer** is the CITY OF CAPE TOWN, represented by the Director : WATER AND SANITATION: DISTRIBUTION SERVICES, or such other Director named in the Works Project contract document(s), and/or such other person or persons duly authorised thereto by the Employer in writing.

The name of the Employer is: CITY OF CAPE TOWN
WATER AND SANITATION: DISTRIBUTION SERVICES

and is referred to in the Contract documents by the terms "Employer", "City of Ca[redacted] "Council" as the context provides.

Clause 1.1.1.16:

Add the following after "Contract Data":

in the Works Project contract document,

The name of the Employer's Agent will be stated in the Works Project contract document(s) and who may be an employee of the Employer or, alternatively, may be an independent agent appointed by the Employer.

Clause 1.1.1.20

Add the following after "Contract":

and also includes the Form of Offer and Acceptance applicable in each Works Project contract document.

Clause 1.1.1.26:

The Pricing Strategy is a Re-measurement Contract.

Clause 1.1.1.28:

The Scope of Work in this Framework Contract document is applicable, as relevant, together with the project specific Scope of Work in each Works Project contract document.

Clause 1.1.1.33:

The "Works" applies to the Works Projects individually or as a whole, as the context provides.

Add the following Clauses after Clause 1.1.1.34:

1.1.1.35 "**Drawings**" means all drawings, calculations and technical information forming part of the Contract documents and any modifications thereof or additions thereto from time to time approved in writing by the Employer's Agent or delivered to the Contractor by the Employer's Agent.

1.1.1.36 "**Framework Contract**" means the Contract as defined in Clause 1.1.1.7; and "**Framework Contract Period**" means the period stated in the Contract Data, during which Works Projects may be allocated to the Contractor and for which Purchase Orders may be raised (issued) provided that such orders be completed prior to the expiry of the period; provided that the Framework Contract shall continue to remain in force after the expiration of the Framework Contract Period until the Final Approval Certificate has been issued by the Employer's Agent for the last outstanding Works Project at the expiration of the Defects Liability Period of that Works Project.

1.1.1.37 "**Framework Contract Manager**" means the person named as the Framework Contract Manager in the Contract Data or any other person appointed from time to time by the Employer and of whom the Contractor is notified, in writing, to act as Framework Contract Manager for the purposes of the Contract as substitute for the Framework Contractor Manager so named.

The function of the Framework Contract Manager is to administer the Framework Contract, and such functions as would normally fall to the Employer's Agent in

[redacted]

accordance with the provisions of the Framework Contract, shall be undertaken by the Framework Contract Manager in this regard.

The Framework Contract Manager shall be an employee of the Employer, authorised as its representative to administer the Framework Contract, and all references to "Employer's Agent" in the Contract shall apply to the Framework Contract Manager in respect of his/her administering the Framework Contract.

The Framework Contract Manager is:

Name: Mr Albie Louw (Senior Professional Officer – Water and Sanitation)
Address: City of Cape Town
Water and Sanitation Head Office
8 Voortrekker Road
Corner of Mike Pienaar Boulevard and Voortrekker Road
Bellville
7535
E-mail: albie.louw@capetown.gov.za]

1.1.1.38 "**Letter of Notification**" means the letters of formal notification, signed by the Employer, of the decision of the Supply Chain Management Bid Adjudication Committee sent to all tenderers. The notification of the decision does not form part of the Employer's Acceptance of a successful tenderer's Offer and no rights shall accrue.

1.1.1.39 "**Panel**" means a number of contractors, of which the Contractor is one, appointed by the Employer under the Framework Contract to be available to execute Works Projects as and when they arise.

1.1.1.40 "**Purchase Order**" means the official purchase order created and released on the City of Cape Town's SAP System.

1.1.1.41 "**Schedules of Rates**" means, in this Framework Contract document, the document so designated in the Pricing Data, and which will be used to compile Bills of Quantities in the Works Project contract document(s).

1.1.1.42 "**Works Project**" means a part of the Works to be performed (task) by a Contractor under the Contract, the specific terms, conditions and scope of the Works Project contract being specified in a Works Project contract document.

1.1.1.43 "**Works Project Acceptance/Refusal Notice**" means the formal notification, signed by the successful tenderer/prospective Contractor and sent to the Employer, of his decision to accept/ refuse the opportunity afforded to participate further in the Contractor appointment procedure for a Works Project as specified in the Contract.

1.1.1.44 **"Intellectual Property"** means any and all intellectual property rights of any nature anywhere in the world whether registered, registerable or otherwise, including patents, trademarks, registered designs and domain names, applications for any of the foregoing, trade or business names, copyright and rights in the nature of copyright, design rights, rights in databases, know-how, trade secrets and any other intellectual property rights which subsist in computer software, computer programs, websites, documents, information, techniques, business methods, drawings, logos, instruction manuals, lists and procedures and particulars of customers, marketing methods and procedures and advertising literature, including the "look and feel" of any websites

Clause 1.2.1.2:

[redacted]

The address of the Employer is:

Physical address:	Tower Block, Civic Centre 12 Hertzog Boulevard Cape Town 8001
Postal address:	P O Box 298 Cape Town 8000
E-mail address:	Etienne.Hugo@capetown.gov.za

The address of the Employer's Agent will be stated in the Works Project contract document(s).

Clause 1.3:

Delete Clause 1.3.5 in its entirety and replace with the following:

1.3.5 Intellectual Property

1.3.5.1 The Contractor acknowledges that it shall not acquire any right, title or interest in or to the Intellectual Property of the Employer.

1.3.5.2 The Contractor hereby assigns to the Employer, all Intellectual Property created, developed or otherwise brought into existence by it for the purposes of the contract, unless the Parties expressly agree otherwise in writing.

1.3.5.3 The Contractor shall be deemed to have given the Employer a non-terminable, transferable, non-exclusive, royalty-free licence to copy, use and communicate the Contractor's documents, including making and using modifications of such documents for further work required to the Works.

1.3.5.4 The Contractor shall, and warrants that it shall:

1.3.5.4.1 not be entitled to use the Employer's Intellectual Property for any purpose other than as contemplated in this contract;

1.3.5.4.2 not modify, add to, change or alter the Employer's Intellectual Property, or any information or data related thereto, nor may the Contractor produce any product as a result of, including and/or arising from any such information, data and Intellectual Property, and in the event that it does produce any such product, the product shall be, and be deemed in law to be, owned by the Employer;

1.3.5.4.3 not apply for or obtain registration of any domain name, trademark or design which is similar to any Intellectual Property of the Employer;

1.3.5.4.4 comply with all reasonable directions or instructions given to it by the Employer in relation to the form and manner of use of the Employer Intellectual Property, including without limitation, any brand guidelines which the Employer may provide to the contractor from time to time;

1.3.5.4.5 procure that its employees, directors, members and contractors comply strictly with the provisions of clauses 1.3.5.4.1 to 1.3.5.4.3 above;

unless the Employer expressly agrees thereto in writing after obtaining authority.

[redacted]

1.3.5.5 The Contractor represents and warrants to the Employer that, in providing goods, services or both, as the case may be, for the duration of the contract, it will not infringe or make unauthorised use of the Intellectual Property rights of any third party and hereby indemnifies the Employer from any claims, liability, loss, damages, costs, and expenses arising from the infringement or unauthorised use by the contractor of any third party's Intellectual Property rights.

1.3.5.6 In the event that the contract is cancelled, terminated, ended or is declared void, any and all of the Employer's Intellectual Property, and any and all information and data related thereto, shall be immediately handed over to the Employer by the contractor and no copies thereof shall be retained by the contractor unless the Employer expressly and in writing, after obtaining due internal authority, agrees otherwise.

Add the following Clause after Clause 1.3.6:

1.3.7 The parties agree that this contract shall also be subject to the Employer's Supply Chain Management Policy ('SCM Policy') that was applicable on the date the bid was advertised. Please refer to this document contained on the CCT's website.

1.3.8 Abuse of the supply chain management system is not permitted and may result in cancellation of the contract, restriction of the supplier, and/or the exercise by the Employer of any other rights and remedies available to it as described in the SCM Policy.

Clause 2:

Add the following Clause after Clause 2.5.1:

2.6 Procedures for the allocation of Works Projects

The Employer reserves the right to plan, allocate and effect individual Works Projects at its sole discretion and as described in this document.

The Employer will only order those quantities of work items which it actually requires for execution in a Works Project from time to time. The Employer reserves the right not to order any quantities at all depending on circumstances and subject to operational requirements.

The Works Projects shall be executed within the City of Cape Town municipal area and outlined in clause C.1.6.1 in Part T1.2 Tender Data.

The Works Projects shall be identified subject to availability of funding.

The procedures for the allocation of Works Projects are described in detail at the end of this Part 1: Contract Data provided by the Employer.

Clause 3.1

Delete clause

Clause 3.2.2

Add the following at the end of the clause:

If, in exercising any discretion, the result of such decision would be to utilise the contingency allowance, increase the contract value or granting of time for practical completion, the

[redacted]

Employer's Agent must obtain approval from the Employer that such funding or time is available and granted by the Employer to be awarded prior to finalising such a decision.

Clause 3.2.3:

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

a) Clause 3.3.1 Nomination of Employer's Agent's Representative
b) Clause 3.3.4 Employer's Agent's authority to delegate
c) Clause 5.8.1 Non-working times
d) Clause 5.11.1 Suspension of the Works
e) Clause 5.12.4 Acceleration instead of extension of time
f) Clause 6. All actions in terms of the clause, subject to 3.2.2 of the Contract Data
g) Clause 6.4.1 Approval of rates for new items
h) Clause 6.10.10 Advance payment, for items not listed in the Advance Payment Schedule
j) Clause 10.1.5 All actions in terms of the clause, subject to 3.2.2 of the Contract Data

Clause 3.3.2.2.3:
Delete the words "oral or" from the clause

Clause 3.3.2.2.4:
Delete the words "oral or" from the clause

Clause 5:

Add the following Clause after Clause 5.1.1.2:

5.1.2 Framework Contract Period

The Framework Contract Period is for a period of **sixty (60) months** calculated from the Commencement Date.

Clause 5.3:

Delete Clauses 5.3.1 to 5.3.3 in their entirety and replace with the following:

5.3.1 Upon appointment to the Panel or Panels the Contractor shall submit the required documentation, for approval by the Framework Contract Manager, as set out below. If the documentation is not submitted with 14 days from the Commencement Date, or is found to be unacceptable, the Employer may terminate the Framework Contract in terms of Clause 9.2.

The documentation required is:

a) Approved framework Health and Safety Plan (Refer to applicable clause in the Health and Safety Specification in Part C3.5 in the Scope of Work)
b) Security (Refer to Clause 6.2)
c) Evidence of Insurance (Refer to Clause 8.6)
d) Occupational Health and Safety Agreement (Part C1.5 in Agreements and contract Data)
e) Letter of Good Standing from the Compensation Commissioner (if not insured with a Licensed Compensation Insurer) (Refer to Clause 4.3)
f) Protection of the Environment Declaration (Part C1.6 in Agreements and Contract Data)

[redacted]

5.3.2 The Contractor shall, save as may be otherwise provided in the Contract or be legally or physically impossible, commence executing the Works on the date specified in the Works Project contract; subject to the submission by the Contractor, and approval by the Employer's Agent, of any documentation required before commencement with Works execution, as set out in the Works Project contract.

The following documentation shall be submitted for **each Works Project** by the highest ranked contractor on a Panel as part of the Works Project submission:

a) Approved site specific Health and Safety plan (Refer to Health and Safety Specification in Part C3.5 Management and any other specific requirements stated in the Works Project contract document)
b) Initial Programme (Refer to Clause 5.6)
c) Evidence of Insurance (Refer to Clause 8.6)
d) Letter of Good Standing with the Bargaining Council for the Civil Engineering Industry (BCCEI)

The time to submit any documentation required before commencement with Works execution of **each Works Project** shall be within the number of days from the Commencement Date of the Works Project as specified in the Works Project contract. Such documentation may include:

e) Method Statement (Refer to Environmental Management Specification in Part C3.5 Management)

5.3.3 Notwithstanding the provisions of Clause 5.3.2, where a construction work permit from the Provincial Director of the Department of Labour is required for a Works Project, commencement of the Works Project shall not be deemed to take place until such construction work permit has been issued by the Provincial Director.

5.3.4 Application for Construction Work Permit

Where the Employer is required to apply to the Provincial Director of the Department of Labour for a construction work permit to perform the intended construction work for a Works Project, the employer shall do so as soon as the Contractor has been appointed to execute the Works for the specific Works Project in terms of the Framework Contract.

Should the issuing of a construction work permit delay the Employer's Agent's instruction to commence executing the Works Projects and this in turn causes a delay to Practical Completion of more than 60days, then the Contractor shall be entitled to make a claim in accordance with Clause 10.1. Should, however, the issuing of a construction work permit be delayed by the submission of a unacceptable draft Health and Safety Plan, in the opinion of either the Employer's Health and Safety Agent, or the Provincial Director of the Department of Labour, no claim for an extension of time will be entertained.

Clause 5.4.2:

Access to and possession of the Site shall not be exclusive to the Contractor insofar as the provisions of Clause 4.8 apply, and where ongoing use by the general public is required.

Add the following Clause after Clause 5.4.3:

5.4.4 The Contractor shall bear all costs and charges for special and temporary rights of way required by him in connection with access to the Site.

Clause 5.6.2.3:

[redacted]

Insert the following after "...approvals,":

... permits,

Clause 5.8.1:

The non-working days are Saturdays and Sundays.

The special non-working days are:

a) All gazetted public holidays.
b) Year-end break(s) not exceeding 15 working days in duration.

Clause 5.12.1:

Add the following:

The Contractor may not claim a delay on another Works Project as causing delay on the particular Works Project contract in question.

Clause 5.12.2.2:

No extension of time will be granted in respect of any delays attributed to normal climatic conditions. Normal climatic conditions shall be deemed to include normal rainfall and associated wet conditions and materials, strong winds and extremes of temperature. However, in the event that delays to critical activities exceed the number of working days listed below for each month, then abnormal climatic conditions shall be deemed to exist, and an extension of time may be claimed in accordance with the provisions of Clause 5.12.

The number of days quoted below shall be regarded as a fair estimate of the delays to be anticipated and allowed for under normal climatic conditions where inclement weather prevents or disrupts critical work.

January	2 days
February	2 days
March	2 days
April	2 days
May	2 days
June	4 days
July	4 days
August	4 days
September	4 days
October	2 days
November	2 days
December	2 days

Claims for delays for abnormal climatic conditions shall be accompanied by substantiating facts and evidence, which shall be submitted timeously as each day or half-day delay is experienced.

It shall be further noted that where the critical path is not affected, no extension of time for abnormal climatic conditions or for any other reason will be entertained.

Clause 5.13.1:

[redacted]

The penalty for failing to complete the Works of each Works Project within the time referred to in Clause 1.1.1.14 is **R7 000** per day.

Insert the following after "actual date of Practical Completion":

... or, in the case of termination by the Employer in terms of Clause 9.2.1, the actual date of termination,

Clause 5.16.3:

The latent defects period is **10** years.

Clause 6.2.1:

The security to be provided by the Contractor shall be a blanket performance guarantee of **R2 100 000**. The performance guarantee shall contain the precise wording of the document included in Part C1.3 of the Contract Data: **Form of Performance Guarantee**, and it shall be issued by a financial institution approved by the Employer at the date when the guarantee is issued. The list of approved financial institutions current at the date of tender is attached to the **Form of Performance Guarantee.**

In the event of the guarantee being called up (in full or in part) the Contractor shall within 21 days of the issue of a first written demand by the Employer to the Guarantor, provide at his own cost a replacement performance guarantee of R2 100 000, and no work will be allocated to the Contractor until the replacement performance guarantee has been provided.

Clause 6.2.2:

Delete Clause 6.2.2 in its entirety.

Clause 6.2.3:

Delete Clause 6.2.3 in its entirety and replace with the following:

The Contractor shall ensure that the performance guarantee remains valid and enforceable until the last Certificate of Completion of the Works for the Works Projects is issued.

Clause 6.5.1.2.3:

The percentage allowance to cover overhead charges is **10%**

Clause 6.8.2:

Add the following to Clause 6.8.2:

The Contract Price shall be subject to contract price adjustment in accordance with Clause 6.8 of the General Conditions of Contract.

If special materials are specified in Part 2 of the Contract Data then the provisions of Clause 6.8.3 of the General Conditions of Contract shall apply to such special materials.

Where applicable, in terms of the foregoing, the value of the certificates issued shall be adjusted in accordance with the Contract Price Adjustment Schedule with the following values:

The value of "x" is 0,10.

The values of the coefficients are:

[redacted]

a = 0,15 b = 0,20 c = 0,55 d = 0,10

The base month is one month prior to the month in which the tender closed. The current month will be the closest month for which indices are available at the time of the recalculation of the rates.

Furthermore, the Contract Price Adjustment Schedule shall be amended as follows:

All scheduled rates will be fixed for each year of the contract period and will be adjusted annually by applying a "Contract Price Adjustment Factor" to each rate, calculated according to the formula and, generally, in accordance with the conditions set out in the Contract Price Adjustment Schedule and in this clause.

If as a result of an award of a contract beyond the original tender validity period, the contract execution will be completed beyond a period of twelve (12) months from the expiry of the original tender validity period, then the contract may be subject to contract price adjustment for that period beyond such twelve (12) months.

"L" is the "Labour Index" and shall be the Consumer Price Index (CPI) for "All items (CPI Headline)", as published in the Statistical News Release, P0141: Table A – Consumer Price Index: Main Indices of Statistics South Africa

"P" is the "Plant Index" and shall be the Construction Materials Price Index for "Plant and Equipment" as published in the Statistical News Release P0151.1, Table 4 – Mining and construction plant and equipment price index of Statistics South Africa.

"M" is the "Materials Index" and shall be the Construction Materials Price Index for selected materials, Materials for "Civil Engineering material – total," as published in the Statistical News Release P0151.1, Table 6 – Civil engineering material price indices of Statistics South Africa

"F" is the "Fuel Index" and shall be the Producer Price Index (PPI) for "Coal and Petroleum Products - Diesel", as published in the Statistical News Release P0142.1: Table 1 –PPI for final manufactured goods of Statistics South Africa

Clause 6.8.3: Variation in the cost of special materials

Price adjustment for variations in the cost of special materials is provided for in the Special Materials Schedule at the end of this Part 1: Contract Data provided by the Employer.

Clause 4.2 of the Contract Price Adjustment Schedule

Delete the words "by the Contractor" that appear after "…. entered in the Contract Data"

Clause 6.8.4:

Add the following to Clause 6.8.4:

Notwithstanding the above, in the event that a public holiday is proclaimed after 7 days before the closing date for an offer on a Works Project, no costs other than those that can be claimed under Clause 5.12.3 shall be added to the Contract Price.

Add the following after Clause 6.8.4:

6.8.5. If price adjustment for variations in the cost of plant and materials imported from outside of South Africa is provided for in the contract data, such adjustment shall

[redacted]

be based on the information contained on the schedule titled "**Price Basis for Imported Resources"**and as below. For the purposes of this clause the Rand value of imported Plant and Materials inserted on the schedule titled "**Price Basis for Imported Resources"** (column (F)) shall be the value in foreign currency (column (A)) converted to South African Rand (column (C)) by using the closing spot selling rate quoted by **Employer's** main banker, [redacted] on the Base Date (seven calendar days before tender closing date) rounded to the second decimal place (column(B)), to which shall be added any Customs Surcharge and Customs Duty applicable at that date (columns (D) and (E)).

6.8.5.1 Adjustment for variations in rates of exchange:

(a) The value in foreign currency inserted in column (A) shall be subject to clause (h) below when recalculating the Rand value.

(b) The rate of exchange inserted in column (B) shall be the closing spot selling rate quoted by **Employer's** main banker, [redacted] on the Base Date, rounded to the second decimal place, subject to sub-paragraph (c) below.

(c) If the rate of exchange inserted by the Tenderer differs from the [redacted] rate referred to above, then the [redacted] rate shall apply and the Rand value in columns (C) and (F) shall be recalculated accordingly, without altering the price in the Schedules of Quantities for the relevant items.

(d) If a tender from a supplier or sub-contractor provides for variations in rates of exchange, the Contractor may **only** claim for variations in rates of exchange if he binds the supplier or sub-contractor to the same provision to take out forward cover as described in sub-paragraph (e) below.

(e) The Contractor (or supplier or sub-contractor) shall within five working days from the date of placing a firm order on an overseas supplier, cover or recover forward by way of a contract with a bank which is an authorised foreign exchange dealer, the foreign exchange component of the cost of any imported Plant and Materials inserted by the Tenderer on the schedule titled "**Price Basis for Imported Resources"**.

(f) When the Contractor (or supplier or sub-contractor) so obtains forward cover, the Contractor shall immediately notify the Employer of the rate obtained and furnish the Employer with a copy of the foreign exchange contract note.

(g) Based on the evidence provided in sub-paragraph (f) above, the value in Rand inserted in column (C) on the schedule titled "**Price Basis for Imported Resources"** shall be recalculated using the forward cover rate obtained, and any increase or decrease in the Rand value defined in this clause shall be adjusted accordingly, subject to sub-paragraph (h) below. Failure to provide such evidence shall result in no such recalculation shall be considered by the Employer.

(h) The adjustments shall be calculated upon the value in foreign currency in the Contractor's (or supplier's or sub-contractor's) **forward cover contract**, provided that, should this value exceed the value in foreign currency inserted in column (A) of the schedule titled "**Price Basis for Imported Resources"**, then the value in column (A) shall be used.

6.8.5.2 Adjustment for variations in customs surcharge and customs duty [redacted]

(a) Any increase or decrease in the Rand value between the amounts of Customs Surcharge and Customs Duty inserted on the schedule titled **"Price Basis for Imported Resources"**and those amounts actually paid to the Customs and Excise Authorities, which are due to changes in the percentage rates applicable or to the foreign exchange rate used by the authorities, shall be adjusted accordingly.

(b) The Tenderer shall state the Customs Duty Tariff Reference applicable to each item and the Contractor shall advise the Employer's Agent of any changes which occur.

6.8.5.3 Adjustment for variation in labour and material Costs

If the prices for imported Plant and Materials are not fixed, the Contractor shall in his Tender specify the formula for calculating Contract Price Adjustments normally used in the country of manufacture and the indices and relative proportions of labour and material on which his Tender prices are based. Evidence of the indices applicable shall be provided with each claim. The indices applicable 42 days before contractual dispatch date from the factory will be used for the purposes of Contract Price Adjustment.

Failure to specify a formula in the Tender shall mean that the prices are fixed or shall be deemed to be fixed.

Clause 6.10.1.5:

Delete Clause 6.10.1.5 in its entirety and replace with the following:

6.10.1.5 The value of Plant and materials:

6.10.1.5.1 up to a percentage limit of **80%** for the Plant and materials referred to in Clause 6.9.1.1 brought on to the Site but not yet built into the Permanent Works;

Provided that the Contractor has produced documentary evidence of ownership of such Plant and/or materials and has delivered to the Employer an indemnity, approved in writing by the Employer, against any claim to or in respect of such Plant and/or materials by reason of the Contractor's sequestration or liquidation, or of any defect in the Contractor's title to the Plant and/or materials;

6.10.1.5.2 which have been manufactured and are stored at places other than the Site, in respect of which the Employer has indicated, on the Advance Payment Schedule, that advance payment will be permitted;

6.10.1.5.3 for which a deposit with order is required from the Contractor by a manufacturer/supplier, only in respect of which the Employer has indicated, on the Advance Payment Schedule, that advance payment will be permitted;

The terms and conditions for advance payment are set out in Clause 6.10.10 and in the Advance Payment Schedule at the end of this Part 1: Contract Data provided by the Employer.

Clause 6.10.1.7:

Add the following after the words "Clause 5.13":

or any other fines or penalties that become due under the Contract.

[redacted]

Clause 6.10.3:

Add the following to Clause 6.10.3:

Notwithstanding the provision of a performance guarantee in terms of Clause 6.2.1, interim payments to the Contractor shall be subject to a retention by the Employer of an amount of **5%** of the said amounts due to the Contractor, with no limit per Works Project. A guarantee in lieu of retention is not permitted.

Clause 6.10.4:

Add the following to the last sentence of Clause 6.10.4:

..., dated as at the date of delivery of the Contractor's statement to the Employer's Agent.

Add the following to Clause 6.10.4:

Notwithstanding the above, the Employer's Agent shall be empowered to withhold the delivery of the payment certificate until the Contractor has complied with his obligations to report in terms of Clause 4.10.2 and as described in the Scope of Work.

The Contractor may submit a fully motivated application regarding more frequent payment to the Employer's Agent to be submitted to the Employer for consideration. Requests for more frequent payments will be considered at the sole discretion of the Employer and is not a right in terms of this contract.

Clause 6.10.10:

Add the following Clause after Clause 6.10.9:

6.10.10 Advance payment

Subject to Clauses 6.10.1.5.2 and 6.10.1.5.3, and the Advance Payment Schedule, the Employer shall make an advance payment for Plant and materials stored at places other than the Site, or in respect of which a deposit with order is required, only once the Contractor has submitted an advance payment guarantee in accordance with this Clause, the authenticity of which has been verified by the City's Treasury Department.

Unless and until the Employer receives this guarantee, the following paragraphs shall not apply.

The Employer's Agent shall issue an Interim Payment Certificate for, or including, advance payment after receiving a statement under Clause 6.10.1 and after the Employer has received a guarantee in an amount equal to the advance payment requested. This guarantee shall be issued by a financial institution approved by the Employer, as listed in the Annexure in Part C1.3 of the Contract Data, and shall be in the form of and shall contain the precise wording of the document included in Part C1.4: **Form of Advance Payment Guarantee** and shall come into force, be administered and expire in terms thereof.

The Employer shall return the guarantee to the Contractor within 14 days after the expiry date.

The provision of the Advanced Payment Guarantee shall be at the Contractor's cost.

The term "deposit" or "deposit with order" used in the context of this Clause elsewhere by reference to this Clause, means a sum payable by the Contractor

[redacted]

manufacturer/supplier prior to the manufacture of an item of Plant or material, required at the time of placing an order, the balance of the value of the item being payable later.

Clause 8.6.1:

The insurances to be effected and maintained by the Contractor shall be in the form of a blanket/umbrella policy for this term tender contract. This policy shall be endorsed as and when required to reflect each Works Project that may be allocated to the Contractor.

Clause 8.6.1.1.1:

The Contract Price shall, for insurance purposes, include for individual Contract Sums of up to **R10 000 000** for each Works Project.

Clause 8.6.1.1.2:

The value of Plant and materials supplied by the Employer to be included in the insurance sum is **R 0.00 (Nil).**

Clause 8.6.1.1.3:

The amount to cover professional fees for repairing damage and loss to be included in the insurance sum is **R0.00 (Nil).**

Clause 8.6.1.3:

The limit of indemnity for liability insurance is R20 000 000.00 for any single claim – the number of claims to be unlimited during the construction and defects liability periods.

Clause 8.6.1.5:

In addition to the insurances required in terms of General Conditions of Contract Clauses 8.6.1.1 to 8.6.1.4 the following insurance is also required:

a) Insurance of Construction Equipment (including tools, offices and other temporary structures and contents) and other things (except those intended for incorporation into the Works) brought onto the site for a sum sufficient to provide for their replacement.

b) Insurance in terms of the provisions of the Compensation for Occupational Injuries and Diseases Act, 130 of 1993.

c) Motor Vehicle Liability Insurance comprising (as a minimum) "Balance of Third Party" Risks including Passenger Liability Indemnity.

d) Where the contract involves manufacturing and/or fabrication of the works or part thereof at premises other than the Site, the Contractor shall satisfy the Employer that all materials and equipment for incorporation in the works are adequately insured during manufacture and/or fabrication. In the event of the Employer having an insurable interest in such works during manufacture or fabrication then such interest shall be noted by endorsement to the Contractor's Policies of Insurance.

Clause 8.6.5:

Delete the following from Clause 8.6.5:

[redacted]

"and the terms thereof shall be subject to the approval of the Employer's Agent, which approval shall not be unreasonably withheld."

Clause 8.6.6:

Replace clause 8.6.6 with the following:

The evidence that the insurances have been effected in terms of Clause 8.6.1, shall be in the form of an insurance broker's warranty worded precisely as given in Part C1.7 Insurance Broker's Warranty.

In addition, an insurance broker's warranty will be required for every Works Project as and when the contractor submits an offer for a Works Project contract. This warranty shall, *inter alia*, confirm that the applicable blanket/umbrella policy for the term tender contract has been endorsed to reflect the Works Project contract and that all premiums have been paid.

Clause 8.6.7:

Add the following to the end of this Clause:

; and/or the Employer shall be entitled to exclude the Contractor from participating in any future Works Project processes until such time as satisfactory evidence has been provided.

Clause 9.1:

In Clause 9.1.6 replace "and 9.1.3" with:

, 9.1.3 and 9.1.7

Add the following Clause after Clause 9.1.6:

9.1.7 Death of Sole Proprietor/Member

Upon the death of the Contractor who was a Sole Proprietor, or a sole member of a Close Corporation, the Contract will terminate forthwith. The Employer shall pay to the Contractor's estate any money which it considers due under the Contract in terms of Clause 9.1.5, in full and final settlement thereof.

9.1.8 Material Irregularity during procurement process

The Employer may terminate the contract if a material irregularity vitiates the procurement process leading to the conclusion of the contract, rendering the procurement process and the conclusion of the resulting contract unfair, inequitable, non-transparent, uncompetitive or not cost-effective, provided the Employer follows the processes as described in its SCM Policy.

9.1.9 Reputational risk or harm to the Employer

The Employer, without prejudice to any other remedy for breach of contract, by written notice of default sent to the supplier, may terminate the contract if the implementation of the contract may result in reputational risk or harm to the City as a result of (inter alia):

9.1.9.1 reports of poor governance and/or unethical behaviour;
9.1.9.2 association with known family of notorious individuals;
9.1.9.3 poor performance issues, known to the Employer;
9.1.9.4 negative social media reports; or

[redacted]

9.1.9.5 adverse assurance (e.g. due diligence) report outcomes.

Clause 9.2.1:

Delete "or" at the end of Clause 9.2.1.3.6 and add the following Clause after Clause 9.2.1.3.7:

9.2.1.3.8 Has failed to provide the required insurances within the prescribed time,

Add the following Clause after Clause 9.2.3:

9.2.4 Employer's Elections in case of Insolvency

In addition to anything else contained in this contract, the Employer may make either of the following elections to ensure its rights are protected and any negative impact on service delivery is mitigated:

9.2.4.1 accept a contractor's proposal (via the trustee / liquidator) to render delivery utilising the appropriate contractual mechanisms; or

9.2.4.2 terminate the contract, as the liquidator proposed contractor is deemed unacceptable to the employer, at any time by giving written notice to the contractor (via the trustee / liquidator).

Clause 10.5.3:

The number of ad-hoc Adjudication Board Members to be appointed is 1(one).

ADDITIONAL CONDITIONS OF CONTRACT

Add the following Clause after Clause 10:

Clause 11Details to be confidential

The Contractor shall treat the details of the Works comprised in this Contract as private and confidential (save in so far as may be necessary for the purposes hereof) and shall not publish or disclose the same or any particulars thereof in any trade or technical paper elsewhere without the prior written consent of the Employer's Agent.

Add the following after Clause 11 :

12. Protection of personal information

12.1 The Supplier acknowledges that, for the purposes of this agreement, they may come into contact with or have access to personal information and other information that may be classified or deemed as private or confidential and for which Purchaser is responsible in terms of Protection of Personal Information Act ("POPIA"). Such personal information may also be deemed or considered as private and confidential as it relates to POPIA.

12.2 The Supplier agrees that they will at all times comply with POPIA and Purchaser's Privacy Notice, and that it shall only collect, use and process personal information it comes into contact with pursuant to this agreement in a lawful manner, and only to the extent required to execute the services, or to provide the goods and to perform their obligations in terms of the service level agreement.

12.3 The Supplier agrees that it shall put in place, and at all times maintain, appropriate physical, technological and contractual security measures to ensure the protection

confidentiality of the personal information that it, or its employees, its contractors or other authorised individuals comes into contact in relation to the service level agreement.

12.4 The supplier agrees that it shall notify the Purchaser immediately where there are reasonable grounds to believe that the personal information of a data subject has been accessed or acquired by any unauthorised person.

12.5 Unless so required by law, the Supplier agrees that it shall treat the personal information as confidential and further not disclose any personal information as defined in POPIA to any third party without the prior written consent of the Purchaser.

12.6 The Supplier hereby indemnifies and holds the Purchaser harmless against all claims, losses, damages and costs of whatsoever nature suffered by the Purchaser arising from or in relation to the Supplier's (and/or its employees', agents' and sub-contractors') non-compliance with applicable data protection laws and/or other legislation.

12.7 The Supplier agrees that the Purchaser may conduct regular data protection audits on the Supplier and undertakes to give its full co-operation in this regard.

13. Performance Monitoring

13.1 As required by section 116(2)(b) of the Local Government: Municipal Financial Management Act 56 of 2003, the City shall monitor the performance of the Contractor on at least a monthly basis, and the supplier agrees to provide the City with its full cooperation in this regard.

[redacted]

PROCEDURES FOR THE ALLOCATION OF WORKS PROJECTS

The procedures for the allocation of Works Projects, given below, are to be read in conjunction with Part T1.2 Tender Data and Clause 2.6 in the Contract Data. These procedures include the development of Works Project contract documents, applying the tendered rates in order to arrive at financial offers, calculating works project evaluation points, ranking the panel of contractors, and allocating the Works Project to the highest ranked contractor.

The procedures are summarised under the stages below, wherein the Employer (acting through his agent) shall

Stage 1: Employer prepares Works Project contract document, prices bills of quantities using each contractor's rates and prepares a works project evaluation ranking for all contractors

a) select a Work Area for the execution of the Works Project;
b) prepare a Works Project contract document, including Bills of Quantities and Scope Work therein;
c) compile priced bills of quantities for all contractors, using their respective framework contract rates.

Stage 2: Contractors collect copy of Works Project contract document and works project evaluation ranking, attend compulsory Works Project meeting and submit acceptance/refusal notices

e) make available to the contractors a copy of the Works Project contract document with the Bills of Quantities priced by the Employer;
f) simultaneously, invite the contractors to attend a compulsory Works Project meeting;
g) conduct the Works Project meeting, including discussing any issues the contractors may have (this may result in changes being made to the Works Project contract document and its being re-issued; and
h) receive acceptance/refusal notices from contractors timeously after the meeting;

Stage 3: Contractors submit completed Works Project contract document and Employer allocates Works Project

i) request the contractors, who attended the Works Project meeting and accepted the work opportunity, to complete the Returnable Schedules, Form of Offer, Works Project Acceptance/Refusal Notice, etc. in the Works Project contract document and submit the completed document to the Employer; and
j) test submissions for completeness and allocate the Works Project to the highest scoring responsive contractor.

Further details of the procedures under the above stages are given below.

Stage 1

As and when the Employer requires work to be executed in a Works Project under the framework contract, the Employer shall specify, *inter alia*, the nature, location(s), extent, scope of work, proposed programme and contract period for the work required, in a **Works Project contract document** comprising, as relevant, Work Allocation Procedures, Returnable Schedules, Agreements and Contract Data, Bills of Quantities and Scope of Work.

In the Bills of Quantities the Employer shall assign quantities to the work items relating to the specific Scope of Work in the Works Project. The assigned quantities shall be multiplied by the

framework contract rates to constitute amounts that will be totalled to provide a **financial offer** for each contractor for this specific Works Project.

Stage 2

The Employer shall invite the contractors to attend a compulsory **Works Project meeting** at a time and venue disclosed in writing by the Employer.

The Employer shall issue the invitation **at least two (2)** days prior to the meeting date, and simultaneously make available to the contractors their individually priced Works Project contract documents.

The Employer shall conduct the compulsory Works Project meeting on the date specified. The purpose of this meeting is to inform the contractors of the Scope of Work required in the Works Project. The meeting shall furthermore serve to answer any queries the contractors may have in respect of the required work, billed items and quantities, etc. (this may result in changes being made to the Works Project contract document and its being re-issued). A contractor who fails to attend the compulsory Works Project meeting will be **excluded** from further participation in the Works Project allocation process.

Included in the Works Project contract document is a Works Project **Acceptance/Refusal Notice** (Form C1.9) requesting the contractor to state in writing whether he accepts/refuses the opportunity afforded to participate further in the work allocation procedure (i.e. that he is willing/not willing to undertake the work specified in the Scope of Work and Bills of Quantities and has/has not the necessary resources, available to complete the work within the required Works Project contract period should he be allocated the work).

Contractors will be required to complete and return the Works Project Acceptance/Refusal Notice, by email, to the Employer prior to the closing date for receipt of Works Project Acceptance/Refusal Notices (non-submission will be regarded as a refusal), including, for those who accept, declaring whether their declarations in respect of sub-contractors made in the Preferencing Schedule in the Framework Contract document stand for the Works Project, or not - refer to Form C1.9 in this regard. The Employer will finalise the ranking of the contractors who accept, after taking their declarations into account.

Stage 3

Upon request of the Employer, the Works Project contract document shall be completed, signed and returned by the contractors who has accepted to the Employer's agent's offices no later than the date stated in such request.

The Employer will specify the proposed Works Project construction time period (time from the date specified for commencement with Works execution to Due Completion Date) for completing the specified Works in the Scope of Work in the Works Project contract document.

The submission of a fully completed and signed Works Project contract document is mandatory for the contractors who has been requested by the Employer to submit offers, and the contractors may be requested by the Employer to complete and/or sign their submission, if necessary, should they have not already done so.

A contractor whose offer is non-responsive, or who failed to return the completed, signed Works Project contract document (the offer) by the date stated in the Employer's request, will be **excluded** from further participation in the Works Project allocation process.

Acceptance of the successful contractor's offer takes place on the date the contractor (now Contractor in terms of the Contract) receives the City of Cape Town's official **purchase order**, such date being the Commencement Date of the Works Project contract.

Each Works Project shall be in the **value range** of up to R10 000 000 (including contingencies and VAT, but excluding contract price adjustment, if applicable).

Working days for these procedures are Mondays to Fridays.

SPECIAL MATERIALS SCHEDULE

Each material dealt with as a special material in terms of Clause 4.1 of the Contract Price Adjustment Schedule of the General Conditions of Contract is stated in the list below. The provisions of Clause 6.8.3 of the General Conditions of Contract shall apply to such special materials. The base prices for the special materials (current at the time of tender) shall be as stated in the schedule below, or where required, shall be furnished by the tenderer/contractor. Only those materials listed by the Employer below shall be considered as special materials.

Special Material	Unit	Base Price
There is no special materials		

Conditions:

1) When called upon to do so, the contractor shall substantiate the prices to be used to determine the adjustment in respect of the special materials listed above with acceptable documentary evidence.
2) In the case of bituminous products, the Employer has provided, in the schedule above, a base rate for bitumen upon which the tendered rates will be deemed to be based, and which will be used for determining the adjustment in the price of such bituminous products.
3) Where an adjustment for the variation in the price of bituminous products is claimed, the claim must be substantiated by a declaration from the manufacturer, confirming the source of bitumen used in such bituminous products at the time in question.
4) Where the source of bitumen (the refinery) is located in the Western Cape Province, or where bitumen sourced from abroad is landed at a port in the Western Cape, the cost of transporting such bitumen within the boundaries of the Western Cape shall be included in the rate for bituminous products. Extra-over rates to cover the cost of transporting bitumen from beyond the borders of the Western Cape have been measured separately in the Bill of Quantities.
5) Where imported bitumen used in bituminous products is landed at a port beyond the borders of the Western Cape, the importers must clearly state whether or not their price is inclusive of transport to the Western Cape, which will determine whether extra-over transport costs are applicable, or not. The price of the imported bitumen itself must be expressed as a landed price in ZAR.

[redacted]

ADVANCE PAYMENT SCHEDULE (Not applicable)

This Advance Payment Schedule is to be read in conjunction with Clauses 6.10.1.5.2, 6.10.1.5.3 and 6.10.10 in the Contract Specific Data. The purpose of this schedule is to itemise specific Plant and materials not yet brought on to the Site for building into the Permanent Works and for which the Employer is prepared to make advance payments to the Contractor, subject to the conditions below.

The items of Plant and materials which have been identified by the Employer as being suitable for advance payment in terms of the Contract are listed in the table below. Should an item or items be added to the list at tender stage by a tenderer, such item(s) will not be binding on the Employer.

Plant and materials which have been manufactured and are stored at places other than the Site:	**Plant and materials yet to be manufactured and for which a deposit with order is required from the Contractor by a manufacturer/supplier, and which may be stored at places other than the Site after manufacture:**

Conditions:

1) The Contractor can only rely on advance payment being permitted by the Employer in respect of the Plant and materials listed in the table above. The Employer may, however, permit advance payment for other Plant and materials in exceptional circumstances and at its sole discretion, during the course of the Contract, and upon reasonable request from the Contractor.
2) Advance payment for the purposes of deposits will only be provided up to a limit of 20% of the value of any one item being claimed.
3) The Contractor shall provide the Employer with documentary evidence of the terms and conditions for which a deposit with order is required by a manufacturer/supplier, together with the advance payment guarantee.
4) The Contractor will also be permitted to obtain advance payment for the balance of the value of the Plant and materials in respect of which he has paid a deposit, for an item which after manufacture is stored at a place other than the Site. The Contractor shall, in respect of such payment, provide an advance payment guarantee, either for such balance or, if the advance payment guarantee in respect of the deposit is to be returned by the Employer upon request, for the whole value of the item.

[redacted]

Part 2: Data provided by the Contractor

Clause 1.1.1.9:

The name of the Contractor is ..... Quetzal Bakery 116cc .....

Clause 1.2.1.2:

The address of the Contractor is

Physical : Address [redacted]

Postal : Address [redacted]

Telephone : [redacted]

email : [redacted]

[redacted]

CITY OF CAPE TOWN

WATER AND SANITATION: DISTRIBUTION SERVICES

CONTRACT NO. 83Q/2023/24

TERM TENDER FOR LAYING OF NEW SEWER MAINS

C1.3 Form of Performance Guarantee

PERFORMANCE GUARANTEE

For use with the Conditions of Contract as described in C1.2 Contract Data Part 1: Contract Data provided by the Employer.

GUARANTOR DETAILS AND DEFINITIONS

"Guarantor" means: .....

"Physical address: .....

"Employer" means: The City of Cape Town, WATER AND SANITATION: DISTRIBUTION SERVICES.

"Contractor" means: The Contractor named in an individual Works Project Contract. .....

"Employer's Agent" means: The Employer's Agent named in an individual Works Project Contract.

"Works" means: Works Projects which may be allocated, individually or as a whole as the context provides, under Framework Contract No. 83Q/2023/24: Term Tender for Laying of New Sewer Mains.....

"Site" means: The site as defined in the Contract Data.

"Contract" means: The Agreement made in terms of the Form of Offer and Acceptance and such amendments or additions to the Contract as may be agreed in writing between the parties, and includes the Works Project Agreement.

"Guaranteed Sum" means: The maximum aggregate amount of R2 100 000.00.

Amount in words: Two million and one hundred thousand Rand.

"Expiry Date" means: The date of issue by the Employer's Agent of the last Certificate of Completion of the Works for the Works Projects.

CONTRACT DETAILS

Employer's Agent issues: Interim Payment Certificates, Final Payment Certificates and the Certificates of Completion of the Works, in respect of individual Works Projects, as defined in the Contract.

PERFORMANCE GUARANTEE

1. The Guarantor's liability shall be limited to the amount of the Guaranteed Sum.

2. The Guarantor's period of liability shall be from and including the date of issue of this Performance Guarantee and up to and including the Expiry Date or the date of payment in full of the Guaranteed Sum, whichever occurs first. The Employer's Agent and/or the Employer shall advise the Guarantor in writing of the date on which the last Certificate of Completion of the Works for the Works Projects has been issued.

3. The Guarantor hereby acknowledges that:

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

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

4. Subject to the Guarantor's maximum liability referred to in 1, the Guarantor hereby undertakes to pay the Employer the sum certified upon receipt of the documents identified in 4.1 to 4.3:

4.1 A copy of a first written demand issued by the Employer to the Contractor stating that payment of a sum certified by the Employer's Agent in an Interim or Final Payment Certificate has not been made in terms of the Contract and failing such payment within seven (7) calendar days, the Employer intends to call upon the Guarantor to make payment in terms of 4.2;

4.2 A first written demand issued by the Employer to the Guarantor at the Guarantor's physical address with a copy to the Contractor stating that a period of seven (7) days has elapsed since the first written demand in terms of 4.1 and the sum certified has still not been paid;

4.3 A copy of the aforesaid payment certificate which entitles the Employer to receive payment in terms of the Contract of the sum certified in 4.

5. Subject to the Guarantor's maximum liability referred to in 1, the Guarantor undertakes to pay to the Employer the Guaranteed Sum or the full outstanding balance upon receipt of a first written demand from the Employer to the Guarantor at the Guarantor's physical address calling up this Performance Guarantee, such demand stating that:

5.1 the Contract has been terminated due to the Contractor's default and that this Performance Guarantee is called up in terms of 5; or

5.2 a provisional or final sequestration or liquidation court order has been granted against the Contractor and that the Performance Guarantee is called up in terms of 5; and

5.3 the aforesaid written demand is accompanied by a copy of the notice of termination and/or the provisional/final sequestration and/or the provisional liquidation court order.

6. It is recorded that the aggregate amount of payments required to be made by the Guarantor in terms of 4 and 5 shall not exceed the Guarantor's maximum liability in terms of 1.

7. Where the Guarantor has made payment in terms of 5, the Employer shall upon the date of issue of the Final Payment Certificate submit an expense account to the Guarantor showing how all monies received in terms of this Performance Guarantee have been expended and shall refund to the Guarantor any resulting surplus. All monies refunded to the Guarantor in terms of this Performance Guarantee shall bear interest at the prime overdraft rate of the Employer's bank compounded monthly and calculated from the date payment was made by the Guarantor to the Employer until the date of refund.

8. Payment by the Guarantor in terms of 4 or 5 shall be made within seven (7) calendar days upon receipt of the first written demand to the Guarantor.

9. The Employer shall have the absolute right to arrange his affairs with the Contractor in any manner which the Employer may deem fit and the Guarantor shall not have the right to claim his release from this Performance Guarantee on account of any conduct alleged to be prejudicial to the Guarantor.

10. The Guarantor chooses the physical address as stated above for the service of all notices for all purposes in connection herewith.

11. This Performance Guarantee is neither negotiable nor transferable and shall expire in terms of 2, where after no claims will be considered by the Guarantor. The original of this Guarantee shall be returned to the Guarantor after it has expired.

12. This Performance Guarantee, with the required demand notices in terms of 4 or 5, shall be regarded as a liquid document for the purposes of obtaining a court order.

[redacted]

13. Where this Performance Guarantee is issued in the Republic of South Africa the Guarantor hereby consents in terms of Section 45 of the Magistrate's Courts Act No 32 of 1944, as amended, to the jurisdiction of the Magistrate's Court of any district having jurisdiction in terms of Section 28 of the said Act, notwithstanding that the amount of the claim may exceed the jurisdiction of the Magistrate's Court.

Signed at .....

Date .....

Guarantor's signatory (1) .....

Capacity .....

Guarantor's signatory (2) .....

Capacity .....

Witness signatory (1) .....

Witness signatory (2) .....

[redacted]

CITY OF CAPE TOWN

WATER AND SANITATION: DISTRIBUTION SERVICES

CONTRACT NO. 83Q/2023/24
TERM TENDER FOR LAYING OF NEW SEWER MAINS

C1.5 Occupational Health and Safety Agreement

AGREEMENT MADE AND ENTERED INTO BETWEEN THE CITY OF CAPE TOWN (HEREINAFTER CALLED THE "EMPLOYER") AND

Quetzal Trading 116 cc
(Contractor/Mandatary/Company/CC Name)

IN TERMS OF SECTION 37(2) OF THE OCCUPATIONAL HEALTH AND SAFETY ACT, 85 OF 1993 AS AMENDED.

I, [redacted], representing Quetzal Trading 116 cc, as an employer in its own right, do hereby undertake to ensure, as far as is reasonably practicable, that all work will be performed, and all equipment, machinery or plant used in such a manner as to comply with the provisions of the Occupational Health and Safety Act (OHSA) and the Regulations promulgated thereunder.

I furthermore confirm that I am/we are registered with the Compensation Commissioner and that all registration and assessment monies due to the Compensation Commissioner have been fully paid or that I/We are insured with an approved licensed compensation insurer.

COID ACT Registration Number: [redacted]

OR Compensation Insurer: FEM Policy No.: [redacted]

I undertake to appoint, where required, suitable competent persons, in writing, in terms of the requirements of OHSA and the Regulations and to charge him/them with the duty of ensuring that the provisions of OHSA and Regulations as well as the Council's Special Conditions of Contract, Way Leave, Lock-Out and Work Permit Procedures are adhered to as far as reasonably practicable.

I further undertake to ensure that any subcontractors employed by me will enter into an occupational health and safety agreement separately, and that such subcontractors comply with the conditions set.

I hereby declare that I have read and understand the Occupational Health and Safety Specifications contained in this tender and undertake to comply therewith at all times.

I hereby also undertake to comply with the Occupational Health and Safety Specification and Plan submitted and approved in terms thereof.

Sig[redacted]ville on the 09 day of June 2025

[redacted]

Witness **Mandat[redacted]**

Signed at Cape Town on the 10 day of June 2025

[redacted]

Wi[redacted]

for and on behalf of
City of Cape Town

[redacted]

CITY OF CAPE TOWN

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TERM TENDER FOR LAYING OF NEW SEWER MAINS

C1.6 Protection of the Environment Declaration

PROTECTION OF THE ENVIRONMENT DECLARATION

The Contractor will not be given right of access to the Site until this form has been signed

CONTRACT NO.: 83Q/2023/24

CONTRACT TITLE: TERM TENDER FOR LAYING OF NEW SEWER MAINS

I/ we, Quetzal Trading 116cc .....{Contractor} record as follows:

1. I/ we, the undersigned, do hereby declare that I/ we am/ are aware of the increasing requirement by society that construction activities shall be carried out with due regard to their impact on the environment.

2. In view of this requirement of society and a corresponding requirement by the Employer with regard to this Contract, I/ we will, in addition to complying with the letter of the terms of the Contract dealing with protection of the environment, also take into consideration the spirit of such requirements and will, in selecting appropriate employees, plant, materials and methods of construction, in-so-far as I/ we have the choice, include in the analysis not only the technical and economic (both financial and with regard to time) aspects but also the impact on the environment of the options. In this regard, I/ we recognise and accept the need to abide by the "precautionary principle" which aims to ensure the protection of the environment by the adoption of the most environmentally sensitive construction approach in the face of uncertainty with regard to the environmental implications of construction.

3. I/ we declare that I/ we have read and understood the contents of the Environmental Management Programme (which is comprised of the Environmental Management Specification and its Annexures) for this Contract, and that I/ we understand my/our responsibilities in terms of enforcing and implementing the Environmental Management Programme. I/ we also declare that I/ we have made appropriate provision in my/ our pricing of the Schedules of Rates items for the Environmental Management Programme.

4. I/ we acknowledge and accept the right of the Employer to deduct, should he so wish, from any amounts due to me/ us, such amounts (hereinafter referred to as fines) as the Employer's Agent shall certify as being warranted in view of my/ our failure to comply with the terms of the Contract dealing with protection of the environment, subject to the following:

4.1 The Employer's Agent, in determining the amount of such fine, shall take into account, *inter alia*, the nature of the offence, the seriousness of its impact on the environment, the degree of prior compliance/non-compliance, the extent of the Contractor's overall compliance with environmental protection requirements and, in particular, the extent to which he considers it necessary to impose a sanction in order to eliminate/reduce future occurrences

4.2 The Employer's Agent shall, with respect to any fine imposed, provide me/ us with a written statement giving details of the offence, the facts on which the Employer's Agent has based his assessment and the terms of the Contract (by reference to the specific clause) which has been contravened.

Signed [redacted] Date 09/06/25 09/06/25

[redacted]

[redacted]

CITY OF CAPE TOWN

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C1.7 Insurance Broker's Warranty

Pro Forma

Letterhead of Contractor's Insurance Broker

Date _____

CITY OF CAPE TOWN
City Manager
Civic Centre
12 Hertzog Boulevard
Cape Town
8001

Dear Sir

CONTRACT NO.: 83Q/2023/24

CONTRACT TITLE: TERM TENDER FOR LAYING OF NEW SEWER MAINS

NAME OF CONTRACTOR: _____

I, the undersigned, do hereby confirm and warrant that all the insurances required in terms of the abovementioned term tender contract have been issued and, in the case of blanket/umbrella policies, will be endorsed to reflect the interests of the CITY OF CAPE TOWN with regard to each Works Project contract, and that all the insurances and endorsements, etc., are all in accordance with the requirements of the contract.

I furthermore confirm that all premiums in the above regard have been paid.

Yours faithfully

Signed: _____

For: _____

CITY OF CAPE TOWN

WATER AND SANITATION: DISTRIBUTION SERVICES

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C1.8 Contract of Temporary Employment as Community Liaison Officer

Construction Contract No.: .....

PROJECT.....

AGREEMENT made between the CONTRACTOR .....
and the Community Liaison Officer....., hereafter referred to as the CLO, for the appointment and employment of a CLO for the duration of the work in respect of the above named construction contract.

1. **THE PARTIES HAVE AGREED THAT**

The CLO will be employed by the CONTRACTOR on a temporary basis for the duration of the work from the date of signing this agreement to the date of practical completion as defined in the Contract, subject to all the conditions set out below.

2. **THE DUTIES OF THE COMMUNITY LIAISON OFFICER SHALL BE:**

1. to keep the community informed on the progress of the project;
2. to keep the Contractor informed on relevant Community affairs and possible grievances;
3. to manage the recruitment of workers from the Sub-Council Job-Seekers Database;
4. to assist the Contractor's supervisory staff in the management of the workers.

3. **THE FOLLOWING CONDITIONS OF EMPLOYMENT SHALL APPLY:**

The Conditions of Temporary Employment as applicable on this Contract for the workers recruited from the Community shall apply equally to the CLO, except that the rate of remuneration shall be **R.....** per working day. These conditions that apply are listed below as they appear in the Contract of Temporary Employment:

3.1 If required to work on a statutory public holiday or Sunday the payment will be double the amount stated in the previous paragraph.

3.2 Maximum hours of work:

(i) 9¼ hours per day
(ii) 45 hours per week;
(iii) 5 days per week;
(iv) 5 hours without an interval, whereupon there shall be an interval of at least 30 minutes;
(v) A spread-over period of 12 hours.

3.3 The CLO shall be entitled to payment where he is prevented from working by reasons which are within the control of the Contractor.

3.4 On days when it is raining the Contractor may, before 9 a.m., decide not to open the site and there will be no pay.

If the Contractor closes the site between 9 a.m. and 1 p.m., the CLO will be paid half the daily wage.

If the site works later than 1 p.m., the CLO will be paid the full daily wage.

3.5 Workers and the CLO will not be permitted to work under conditions of:

(i) undisciplined or unruly behaviour;
(ii) insubordination to Team Leader, Supervisors or Management;
(iii) abuse of intoxicating substances;
(iv) criminal actions by the employee;
(v) strike action or political stayaways.

3.6 Workers, including the CLO, may be dismissed after two official written warnings for the following behaviour:

(i) undisciplined or unruly behaviour;
(ii) insubordination to Team Leader, Supervisors or Management;
(iii) abuse of intoxicating substances;
(iv) wilful or negligent damage to or loss of machines or equipment.

The Contractor shall ensure that he has statements from at least two witnesses concerning any of the above situations.

The Contractor shall inform the CLO within 24 hours of any warning issued to workers employed from the Job-Seekers Database.

3.7 The CLO will be paid on a Friday afternoon every two weeks, one week in arrears.

3.8 The CLO shall be given a statement with each payment on which is recorded:

(i) the name of the Contractor;
(ii) the CLO's name;
(iii) the number of days worked by the CLO;
(iv) the rate per day;
(v) the details of any deductions made;
(vi) the actual amount paid to the CLO.

3.9 No deduction shall be made from the remuneration except where the CLO consents in writing or unless the Contractor is permitted or required to do so by law or the order of any competent court.

3.10 The CLO shall be supplied free of charge with all health and safety equipment required by the Occupation Health and Safety Act. The equipment shall remain the property of the Contractor.

3.11 The Contractor must give the CLO at least one week's notice of the termination of the Contract of Temporary Employment. If this is not done, the CLO must be paid earnings for five days. This condition does not apply if the CLO is dismissed.

3.12 At the end of the period of temporary employment, the Contractor shall provide a Certificate of Service recording the Contractor's name, the CLO's name and address, the period of service, the type of work on which the CLO was engaged and the rate of remuneration on termination.

4. TERMINATION OF AGREEMENT

4.1 If the CLO can no longer perform and execute his/her duties as detailed in this agreement, this agreement will be terminated without prejudice to any rights under this agreement.

5. THE CONDITIONS OF THIS AGREEMENT

5.1 The parties expressly declare that this agreement contains all the conditions negotiated between them, and no condition or stipulation not contained herein shall be binding upon the parties.

6. THUS AGREED AND SIGNED BY THE PARTIES:

Contractor: .....

Community Liaison officer: .....

Date: .....

[redacted]

CITY OF CAPE TOWN

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TERM TENDER FOR LAYING OF NEW SEWER MAINS

C1.9 Works Project Acceptance/Refusal Notice

This form must be returned to the offices of the Employer's agent by no later than the closing date and time for receipt of Works Project Acceptance/Refusal Notices stated in the Works Project contract document.

I/We herewith

Accept ☐

Refuse ☐

} Tick applicable box

the opportunity afforded to me/us by the City of Cape Town to participate in the work allocation process as set out in the Work Allocation Procedures for the work specified in the Works Project contract document.

I/We accept that no contractor will be allocated work unless the contractor has demonstrated to the satisfaction of the Employer that he has the resources, including a site specific construction manager, required for this Works Project.

I/We agree to the construction time period specified in the Scope of Work.

Declaration (to be completed by a contractor who accepts):

With reference to condition 8 in Section 2 in Schedule 19 Preferencing Schedule in Part 2.2 Returnable Schedules in the framework contract document, I/we declare that I/we **DO** ☐ / **DO NOT** ☐ (tick one box as applicable) intend sub-contracting more than 25% of the value of the Works Project contract to sub-contractors that do not qualify for at least the points that I/we as prime contractor qualified for in my/our framework contract.

CONTRACTOR'S NAME: .....

AUTHORISED CONTACT PERSON (NAME): .....

SIGNATURE: .....

DATE:.....

PART C2: PRICING DATA

		Pages
C2.1	Pricing Assumptions	47 - 48
C2.2	Schedules of Rates	49 – 71

[redacted]

C2.1 Pricing Assumptions

Pricing Assumptions mean the criteria as set out below, read together with all Parts of this framework contract document, which it will be assumed in the contract,that the tenderer has taken into account when developing his prices (rates).

These Pricing Assumptions are applicable to the Schedules of Rates in this document. Pricing Assumptions applicable to the Bills of Quantities in Works Project contract documents are provided in such documents.

1. The method of measurement published by the South African Bureau of Standards in clause 8 of the Standardised Specifications for Civil Engineering Construction is applicable, subject to the variations and amendments in the respective "Measurement and Payment" clauses in the particular specifications contained in Part C3.4 Construction in the Scope of Work.

2. Descriptions in the Schedules of Rates are abbreviated and comply generally with those in the Standardised Specifications. The measurement and payment clauses of each Standardised Specification, read together with the relevant clauses of the Scope of Work, set out what ancillary or associated activities are included in the rates for the operations specified. Should any requirements of the measurement and payment clause of the applicable Standardised Specification, or the Scope of Work, conflict with the terms of the Schedules of Rates, the requirements of the Standardised Specification or Scope of Work, as applicable, shall prevail.

3. The measurement and payment clauses in a specification in which further information regarding the scheduled items is given, are referenced under "Item" (pay items) in the Schedules of Rates. The referenced clauses are not necessarily the only sources of information in respect of scheduled items. Further information and specifications may be found elsewhere in the Contract Documents. Standardised Specifications are identified by the letter or letters which follow SANS in the SANS 1200 series of specifications, eg. G for SANS 1200 G.

4. Unless otherwise stated, items are measured net in accordance with the drawings, and no allowance is made for waste.

5. No quantities are set out in the Schedules of Rates and the Contractor will be required to undertake whatever quantities may be directed by the Employer's Agent from time to time in the relevant Works Project. The final Contract Price for each completed Works Project shall be computed from the actual quantities of work done, valued at the relevant rates (refer to Clause 10 in these Pricing Assumptions in this regard).

6. Rates inserted in the Schedules of Rates are deemed to be based on Acts, Ordinances, Regulations, By-laws, International Standards and National Standards that were published 28 days before the closing date for tenders. (Refer to www.stanza.org.za or www.iso.org for information on standards).

7. The rates (excluding VAT) inserted in the Schedules of Rates shall be the full inclusive rates for the work described under the several items. Such rates shall cover all costs and expenses that may be required in and for the execution of the work described, and shall cover the cost of all general risks, liabilities, and obligations set forth or implied in the documents on which the tender is based, as well as overhead charges and profit. Reasonable rates shall be inserted as these will be used as a basis for assessment of payment for additional work that may have to be carried out.

   Where the Scope of Work requires detailed drawings and designs or other information to be provided, all costs associated therewith shall be provided for and included in the rates tendered for such items.

8. A rate is to be entered against each item in the Schedules of Rates. **An item against which no rate (or rates, in the case of rate categories if provided) is/are entered, or if anything other than a rate or a nil rate (for example, a zero, a dash or the word "included" or abbreviations thereof) is entered against an item, it will also be regarded as a nil rate having been entered against that item, i.e. that there is no charge for that item.** The Tenderer may be requested to clarify nil rates, or items regarded as having nil rates; and the Employer may also perform a risk analysis with regard to the reasonableness of such rates.

9. The units of measurement described in the Schedules of Rates are metric units. Abbreviations which ma[redacted] be used in these Schedules of Rates are as follows:

m	=	Metre	h	=	hour
km	=	Kilometre	t	=	ton (1000 kg)
m2	=	square metre	No.	=	number
m3	=	cubic metre	sum	=	lump sum
m3.km	=	cubic metre-kilometre	P C sum	=	Prime Cost sum
l	=	Litre	Prov sum	=	Provisional sum
kl	=	Kilolitre	%	=	per cent
day	=	Working day	kW	=	kilowatt

10. **The Tenderer may not group a number of items together and tender one lump sum for such group of items.**

11. **The tendered rates shall remain valid and binding, subject to contract price adjustment, if applicable, for the full duration of the framework contract.**

12. Tenderers shall provide rates for the execution of items as specified in the Schedules of Rates. Unless otherwise described in the items in the Schedules of Rates, all rates (sums in particular) apply to individual Works Project contracts. Framework Contract pay items shall be initial one-off payments in the Framework Contract.

    The rates provided in the Schedules of Rates shall be used in representative Works Projects for tender evaluation purposes in accordance with clause C.3.11.1 in Part T1.2 Tender Data, as well as in the allocation of individual Works Projects in accordance with Clause 2.6 in Part C1.2 Contract Data and the Procedures for the allocation of Works Projects referred to therein.

13. Tenderers shall provide rates (excluding VAT) for each required rate category (if provided) for each item specified in every schedule in the Schedules of Rates (refer to clause C.2.10.5 in Part T1.2 Tender Data). Prime Cost and Provisional Sums will be multiplied by a factor (quantity) to be provided by the Employer at Works Project stage only.

14. Tenderers are referred to clause C.1.6.1 in Part T1.2 Tender Data with regard to working within the boundaries identified within the City of Cape Town municipal area, as shown on the drawings and as tabled therein.

    Rates submitted in the respective Schedules of Rates shall apply to Works Projects executed anywhere within the City of Cape Town municipal area..

15. The Employer will only order those quantities of work items, which it actually requires for execution in a Works Project from time to time. The Employer reserves the right not to order any quantities at all depending on circumstances and subject to operational requirements.

16. The procedures for allocation of Works Projects are specified in Part C1.2 Contract Data (refer to Clause 2.6).

17. Clause C.2.13.11 c) in Part T1.2 Tender Data shall be applicable to the submission of Schedules of Rates which have been priced electronically, and which the Tenderer wishes to submit as a printed version with his tender in the place of handwritten priced Schedules of Rates.

    If there is found to be any variance between the printed version and the original issued document, the original shall stand. However, where Addenda have been issued which amend the Schedules of Rates, then the printed Schedules of Rates shall take these into account.

    The pages of the issued Schedules of Rates should not be removed from the tender document.

18. Tenderers are referred to Clause E8 Measurement and Payment in the Environmental Management (EM) Specification in Part C3.5 in the Scope of Work for the basic principles of measurement and pricing of the EM Specification.

19. Tenderers are referred to Clause 6.8.2 in Part C1.2 Contract Data regarding contract price adjustment.

[redacted]

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C2.2 Schedules of Rates

Bid specifications may not make any reference to any particular trade mark, name, patent, design, type, specific origin or producer, unless there is no other sufficiently precise or intelligible way of describing the characteristics of the work, in which case such reference must be accompanied by the words "or equivalent".

TENDERERS MUST NOTE THAT WHEREVER THIS DOCUMENT REFERS TO ANY PARTICULAR TRADE MARK, NAME, PATENT, DESIGN, TYPE, SPECIFIC ORIGIN OR PRODUCER, SUCH REFERENCE SHALL BE DEEMED TO BE ACCOMPANIED BY THE WORDS 'OR EQUIVALENT"

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[redacted]

SCHEDULE A: PRELIMINARY AND GENERAL (SMALL WORKS)

ITEM NO	PAYMENT	DESCRIPTION	UNIT	RATE
	SANS 1200 A	PRELIMINARY AND GENERAL (SMALL WORKS)		
	8.3	SCHEDULED FIXED-CHARGE AND VALUE-RELATED ITEMS		
		Contractor's general obligations		
A10	PSA 8.3.1.1	Security (performance guarantee) (Framework contract once off pay item)	Sum	15 000.00
A20	PSA 8.3.1.2	Insurance (blanket/umbrella policy) (Framework contract annual pay item)	Sum	15 000.00
	8.3.2	Establishment of facilities on the Site		
	8.3.2.2	Facilities for the Contractor		
A30		a) Offices and storage sheds	Sum	10 000.00
A40		e) Ablution and latrine facilities	Sum	1 512.50
A50		g) Water supplies, electric power (including provision of generator) and communications	Sum	1 916.67
A60	8.3.3	General responsibilities and other fixed-charge obligations	Sum	3 500.00
A70	8.3.4	Removal of Site Establishment	Sum	3 500.00
A80		Testing carried out by commercial or council laboratory as ordered by Employer's Agent	Prov Sum	10 000.00
A90		% Profit and Attendance for item A80	%	12.00%
	8.4	SCHEDULED TIME-RELATED ITEMS		
A100	8.4.1	Contractual requirements	day	3 166.67
	8.4.2	Operation and Maintenance of Facilities on Site, for the duration of the Duration of Construction, except where otherwise stated		
	PSA 8.4.2.2	Facilities for the Contractor		
A110		a) Offices and storage sheds	day	300.00
A120		e) Ablution and latrine facilities	day	150.00
A130		g) Water supplies, electric power (including provision of generator) and communications	day	200.00
A140	8.4.5	General responsibilities and other fixed-charge obligations	day	1 000.00
	PSA 8.7	DAYWORKS (As ordered by the Employer's Agent)		
		LABOUR CHARGES		
A150		(a) Skilled Labourer	h	75.00
A160		(b) Unskilled Labourer	h	59.00
A170		(c) Team leader	h	65.00
A180		(d) Foreman	h	130.00
A190		(e) Artisan / Pipelayer/ Bricklayer	h	79.00
A200		(f) Plant Operator	h	69.00
A210		(g) Flagperson	h	50.00
A220		(h) Driver	h	55.00
A230		(i) Security Guard	h	48.00
A240		(j) Steel Welder	h	90.00
		MATERIALS CHARGES		
A250		(a) Actual cost of material (excl. VAT)	Prov Sum	100 000.00
A260		(b) Handling costs in respect of item A250	%	12.00%
		PLANT CHARGES (As ordered by the Employer's Agent)		
A270		(a) Backhoe / Digger loader	h	550.00

A280		(b) Tractor	h	253.38
A290		(c) Trailor	h	100.00
		(d) Tip truck		
A300		(i) Capacity of 6 m3	h	450.00
A310		(ii) Capacity of 10 m3	h	500.00
A320		(e) Walk-behind vibrating roller (1t)	h	160.00
A330		(f) Plate compactor	h	70.00
A340		(g) Water cart (5000 l)	h	320.00
A350		(h) Water cart (9000 l)	h	480.00
A360		(i) Concrete mixer	h	80.00
		(k) Flat bed truck		
A370		(i) Capacity of 3 ton	h	350.00
A380		(ii) Capacity of 6 ton	h	400.00
A390		(l) Compressor (16 m3 / min) including hoses and breakers	h	300.00
A400		(m) Excavator (minimum 20 ton)	h	950.00
A410		(n) Excavator (minimum 30 ton)	h	1 050.00
		(o) Light delivery vehicle		
A420		(i) Capacity of 0,5 ton	h	95.00
A430		(ii) Capacity of 1 ton	h	140.00
		(p) Pumps		
		Super Silent Selwood Seltorque pumps (or similar approved)		
A440		(i) 75mm diam	h	170.00
A450		(ii) 100mm diam	h	390.00
A460		(iii) 150mm diam	h	530.00
A470		(q) Sludge pump	h	150.00
A480		(r) Other plant not specified above	Prov Sum	10 000.00
A490		(s) Handling costs in respect of item A480	%	12.00%
	PSA 8.8	TEMPORARY WORKS		
	PSA 8.8.1	Main access roads to works		
		Construction and reinstatement of temporary access roads		
A500		(a) Up to 3 meter width	m	517.42
A510		(b) Up to 7 meter width	m	730.08
		Removal of temporary access roads and reinstate site to original condition		
A520		(a) Up to 3 meter width	m	346.67
A530		(b) Up to 7 meter width	m	416.67
	PSA 8.8.2	Accommodating traffic and maintaining temporary deviations one and two-way traffic as per the traffic manual in : (incl. traffic safety officer,flagmen, delineators and all signage)		
A540		(a) Point repair (Up to 15 meter)	No.	4 462.50
A550		(b) Point repair (Over 15m and up to 30 meter)	No.	6 812.50
A560		(c) Short Term Works	km	8 000.00
A570		(d) Urban streets - Two-Way lane closure	km	12 000.00
A580		(e) Urban streets - One-Way traffic accommodated	km	7 000.00
A590		(f) Urban streets - Lane Closure in and beyond junction	km	7 000.00
	PSA 8.8.4.1	Location and protection of existing services		
A600		(a) Supply or hire of specialist equipment for detection of existing services	Sum	1 500.00
A610		(b) The use of specialist equipment for detection	h	250.00
	PSA 8.8.4.2	Hand excavation necessary for locating and exposing existing services in all materials:		
A620		(a) In roadways	m^3	300.00
A630		(b) In all other areas	m^3	300.00

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	PSA 8.8.7	Dealing with water:		
A635		(a) Establishment	Sum	2 312.50
A640		(b) Dealing with subsurface water	day	1 500.00
A650		(c) Dealing with surface water	day	1 000.00
	PSA 8.8.7	Dealing with subsurface water by means of a well point system		
A655		(a) Establishment	Sum	3 500.00
A660		(b) Installation of well points and manifold	No.	545.08
A670		(c) Operate and maintain (150 points max)	day	2 000.00
A675		(d) Operate and maintain (300 points max)	day	3 500.00
A680		(e) Provisional Sum for other Specialist dewatering not covered above	Prov Sum	10 000.00
A690		(f) % Profit and Attendance for item A680	%	12.00%
	PSA 8.8.8	Watching, lighting and temporary fencing		
	PSA 8.8.8.1	Provision of PSiRA Security Guards as approved by the Employers Agent		
A700		a) PSiRA Grade A Guard	Man-day	1 250.00
A710		b) PSiRA Grade B Armed Guard	Man-day	1 100.00
A720		c) PSiRA Grade B Unarmed Guard	Man-day	640.00
A730		d) PSiRA Grade C Armed Guard	Man-day	1 000.00
A740		e) PSiRA Grade C Unarmed Guard	Man-day	600.00
A750		f) PSiRA Grade D Unarmed Guard	Man-day	580.00
A760		g) Extra-over item (a-f) above for security guards working overtime, night work, or on a weekend or public holiday when instructed	Man-day	946.67
A770		h) Temporary fencing	m	68.54
A780		i) Lighting	day	600.00
	PSA 8.8.9	Liaison with Service Authorities		
		Wayleave applications		
A790		a) Roads & Stormwater	Sum	1 000.00
A800		b) Water and Sanitation - Services	Sum	1 000.00
A810		c) Water and Sanitation - Bulk	Sum	1 000.00
A820		d) Eskom Electricity	Sum	1 000.00
A830		e) City of Cape Town - Electricity Department	Sum	1 000.00
A840		f) Telkom	Sum	1 000.00
A850		g) Neotel	Sum	1 000.00
A860		h) Other	Prov Sum	2 000.00
A870		i) Handling costs and profit for item A860	%	12.00%
A880		j) Application for use of portion of public open space per Works Project	Prov Sum	20 000.00
A890		k) Monthly rental of portion of public open space per Works Project	Prov Sum	10 000.00
	PSA 8.9	HEALTH AND SAFETY		
A900	PSA 8.9.1	Complying with Health and Safety requirements	day	833.33
	PSA 8.9.2	Asbestos Specialist Services:		
A910		(a) Approved Asbestos Inspection Authority (AIA) to assist the contractor with the approval of the asbestos plan of work, in accordance with legislation	Prov Sum	15 000.00
A920		(b) Administrative costs and profit in respect of item A890	%	12.00%
A930		(c) Handling and disposal of asbestos-containing waste from site to the permitted Vissershok landfill site, in accordance with legislation	Sum	5 208.33
A940		(d) Transport of asbestos-containing waste at the permitted low-hazard (H:h) landfill site at Vissershok, in accordance with legislation	ton.km	53.33
A950		(e) Cost of dumping at permitted Vissershok landfill site (Original tipping slips are required for audit purposes)	ton	901.00

A960		Medical surveilance per site employee of the Contractor, as stipulated in Asbestos Regulations	No.	1 000.00
		ENVIRONMENTAL MANAGEMENT		
A970	PSA 8.10	Complying with Environmental Management requirements	day	300.00
A980	PSA 8.11	Noise Exemption Permit per Works Project	Sum	1 500.00
		COMMUNITY LIAISON OFFICER		
A990		a) Employment of CLO	Work day	460.00
A1000		a) Handling costs and profit for item A990	%	12.00%

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SCHEDULE B: SITE CLEARANCE

	SANS 1200 C	SITE CLEARANCE		
		Clear and Grub:		
B10	8.2.1	Clear and grub site (provisional: area to be designated by Employers Agent)	m²	5.00
	8.2.2	Remove and grub trees and tree stumps of girth		
B20		a) over 0,5m up to and including 1,0m	No.	200.00
B30		b) over 1,0 m up to and including 2,0m	No.	350.00
	PSC 8.2.7	Dismantle and remove		
		a) Dismantle and Remove: Pipelines		
		Dismantle and Remove: Pipelines (all materials)		
B40		i) Up to 250mm diameter	m	50.00
B50		ii) Over 250mm diameter up to 500mm diameter	m	60.00
B60		iii) Over 500mm diameter	m	80.00
		Dismantle and Remove: Pipelines encased in concrete (all materials)		
B70		iv) Up to 250mm diameter	m	100.00
B80		v) Over 250mm diameter up to 500mm diameter	m	120.00
B90		vi) Over 500mm diameter	m	200.00
B100		b) Dismantle and Remove: Manholes (Fibre cement or Concrete)	No.	1 766.75
B110		c) Dismantle and Remove: Manholes (Brick)	No.	1 762.29
B120		d) Dismantle and Remove: Kerb, Edging and channels	m	80.00
		e) Dismantle and Remove: Asphalt		
B130		i) Asphalt (0mm to 50mm thick)	m²	35.00
B140		ii) Asphalt (Over 50mm thick)	m²	50.00
B150		f) Dismantle and Remove: Road Signs	No.	200.00
B160		g) Dismantle and Remove: Vertical poles / bollards	No.	280.42
		h) Dismantle and Remove: Fence		
B170		i) All wire type fencing	m	65.00
B180		ii) All palisade type fencing	m	117.50
B190		iii) Vibracrete walls	m	200.00
B200		i) Dismantle and Remove: Trees and Plants / Shrubs	No.	70.00
B210		j) Dismantle and Remove: Grass and lawns	m²	40.00
		k) Dismantle and Remove: Concrete in roads, driveways or walkways		
B220		i) Up to 100mm thick concrete	m²	60.00
B230		ii) over 100mm and up to 200mm thick concrete	m²	75.00
B240		iii) over 200mm thick concrete	m²	110.00
B250		l) Dismantle and Remove: Brick Paving in roads, driveways or walkways	m²	50.00
B260	PSC 8.2.10	Remove topsoil to a nominal depth of 150mm, stockpile and reinstate	m³	45.00
B270	PSC 8.2.11	Remove and dispose of rubble	m³	150.00
	PSC 8.2.12	Remove and stockpile material for later reinstatement (including reinstatement upon completion)		
B280		a) Kerbs, edging and channels	m	35.00
B290		b) Road signs	No.	200.00
B300		c) Trees and Plants / Shrubs	No.	100.00
B310		d) Vertical poles / bollards	No.	100.00
B320		e) Grass and lawns	m²	22.00
B330		f) Brick Paving in roads, driveways or walkways	m²	50.00
		g) Fence		

B340		i) All wire type fencing	m	200.00
B350		ii) All palisade type fencing	m	200.00
B360		iii) Vibracrete walls	m	250.00
	PSC 8.2.13	Remove existing and install new (including reinstatement upon completion)		
B370		a) Road Signs	No.	250.00
B380		b) Trees and Plants / Shrubs	No.	250.00
B390		c) Vertical poles / bollards	No.	250.00
		d) Fence		
B400		i) All wire type fencing	m	250.00
B410		ii) All palisade type fencing	m	280.00
B420		iii) Vibracrete walls	m	350.00
	PSC 8.2.14	Saw cutting of existing surfaces		
		a) Asphalt		
B430		i) Asphalt (0mm to 50mm thick)	m	35.21
B440		ii) Asphalt (Over 50mm thick)	m	51.25
		b) Concrete		
B450		i) Up to 100mm thick concrete	m	69.79
B460		ii) over 100mm and up to 200mm thick concrete	m	120.00
B470		iii) over 200mm thick concrete	m	150.00
B480		c) Paving	m	59.79
		MISCELLANEOUS		
B490	PSC 8.2.16	Removal of Bees	Prov Sum	2 000.00
B500		Handling costs in respect of item B490	%	10.00%

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SCHEDULE C: EARTHWORKS (PIPE TRENCHES)

	SANS 1200 DB	EARTHWORKS (PIPE TRENCHES)		
		EXCAVATION		
	PSDB 8.3.2 a)	Excavate in all materials **by machine** for trenches, backfill, compact, and dispose of surplus material (Sections without shoring)		
		Over 100mm up to 400 mm diam. for total trench depth:		
C10		a) Exceeding 0,0 m but not exceeding 1,0 m	m	90.00
C20		b) Exceeding 1,0 m but not exceeding 2,0 m	m	100.00
C30		c) Exceeding 2,0 m but not exceeding 3,0 m	m	200.00
C40		d) Exceeding 3,0 m but not exceeding 4,0m	m	300.00
C50		e) Exceeding 4,0 m but not exceeding 5,0 m	m	400.00
C60		f) Exceeding 5,0 m but not exceeding 6,0 m	m	600.00
C70		g) Exceeding 6,0 m but not exceeding 7,0 m	m	800.00
C80		h) Exceeding 7,0 m but not exceeding 8,0 m	m	950.00
		Over 500mm up to 1000 mm diam. for total trench depth:		
C90		a) Exceeding 0,0 m but not exceeding 1,0 m	m	100.00
C100		b) Exceeding 1,0 m but not exceeding 2,0 m	m	150.00
C110		c) Exceeding 2,0 m but not exceeding 3,0 m	m	250.00
C120		d) Exceeding 3,0 m but not exceeding 4,0m	m	350.00
C130		e) Exceeding 4,0 m but not exceeding 5,0 m	m	450.00
C140		f) Exceeding 5,0 m but not exceeding 6,0 m	m	650.00
C150		g) Exceeding 6,0 m but not exceeding 7,0 m	m	850.00
C160		h) Exceeding 7,0 m but not exceeding 8,0 m	m	1 000.00
	PSDB 8.3.2 b)	Extra-over items C10 to C160 incl. for (provisional):		
C170		i) Intermediate material	m^3	155.00
C180		ii) Hard rock	m^3	800.00
	PSDB 8.3.2 a)	Excavate in all materials **by machine** for trenches, backfill, compact, and dispose of surplus material (Sections with shoring)		
		Over 100mm up to 400 mm diam. for total trench depth:		
C10A		a) Exceeding 0,0 m but not exceeding 1,0 m	m	190.00
C20A		b) Exceeding 1,0 m but not exceeding 2,0 m	m	200.00
C30A		c) Exceeding 2,0 m but not exceeding 3,0 m	m	300.00
C40A		d) Exceeding 3,0 m but not exceeding 4,0m	m	400.00
C50A		e) Exceeding 4,0 m but not exceeding 5,0 m	m	500.00
C60A		f) Exceeding 5,0 m but not exceeding 6,0 m	m	700.00
C70A		g) Exceeding 6,0 m but not exceeding 7,0 m	m	900.00
C80A		h) Exceeding 7,0 m but not exceeding 8,0 m	m	1 050.00
		Over 500mm up to 1000 mm diam. for total trench depth:		
C90A		a) Exceeding 0,0 m but not exceeding 1,0 m	m	200.00
C100A		b) Exceeding 1,0 m but not exceeding 2,0 m	m	250.00
C110A		c) Exceeding 2,0 m but not exceeding 3,0 m	m	350.00
C120A		d) Exceeding 3,0 m but not exceeding 4,0m	m	450.00
C130A		e) Exceeding 4,0 m but not exceeding 5,0 m	m	550.00
C140A		f) Exceeding 5,0 m but not exceeding 6,0 m	m	750.00
C150A		g) Exceeding 6,0 m but not exceeding 7,0 m	m	950.00
C160A		h) Exceeding 7,0 m but not exceeding 8,0 m	m	1 100.00
	PSDB 8.3.2 b)	Extra-over items C10A to C160A incl. for (provisional):		
C170A		i) Intermediate material	m^3	155.00

C180A		ii) Hard rock	m^3	800.00
C190	PSDB 8.3.2 c)	Excavate and dispose of unsuitable material from trench bottom (Provisional)	m^3	110.00
	PSDB 8.3.2 d)	Excavate in all materials **by hand** for trenches, backfill, compact, and dispose of surplus material		
		Over 100mm up to 400 mm diam. for total trench depth:		
C200		a) Exceeding 0,0 m but not exceeding 1,0 m	m	160.00
C210		b) Exceeding 1,0 m but not exceeding 2,0 m	m	250.00
C220		c) Exceeding 2,0 m but not exceeding 3,0 m	m	350.00
		Over 500mm up to 1000 mm diam. for total trench depth:		
C230		a) Exceeding 0,0 m but not exceeding 1,0 m	m	200.00
C240		b) Exceeding 1,0 m but not exceeding 2,0 m	m	300.00
C250		c) Exceeding 2,0 m but not exceeding 3,0 m	m	400.00
	PSDB 8.3.2 b)	Extra-over items C200 to C250 incl. for (provisional):		
C260		i) Intermediate material	m^3	200.00
C270		ii) Hard rock	m^3	1 100.00
	PSDB 8.3.2 e)	Excavations for point repairs and manhole or sand/grit traps installation		
		Excavate in all materials for point repair, backfill, compact and dispose of surplus material material for all pipe diameters for the following depths:		
C280		a) Exceeding 0,0 m but not exceeding 1,0 m	m^3	180.00
C290		b) Exceeding 1,0 m but not exceeding 2,0 m	m^3	210.00
C300		c) Exceeding 2,0 m but not exceeding 3,0 m	m^3	280.00
C310		d) Exceeding 3,0 m but not exceeding 4,0m	m^3	400.00
C320		e) Exceeding 4,0 m but not exceeding 5,0 m	m^3	650.00
C330		f) Exceeding 5,0 m but not exceeding 6,0 m	m^3	850.00
C340		g) Exceeding 6,0 m but not exceeding 7,0 m	m^3	1 000.00
C350		h) Exceeding 7,0 m but not exceeding 8,0 m	m^3	1 200.00
	PSDB 8.3.2 b)	Extra-over items C280 to C350 incl. for (provisional):		
C360		i) Intermediate material	m^3	150.00
C370		ii) Hard rock	m^3	900.00
	PSDB 8.3.2 b)	Extra-over C180, C270 and C370 for excavation in hard rock		
C380		iii) using pneumatic tools or other techniques where blasting is not permitted	m^3	456.25
		EXCAVATION ANCILLARIES		
	PSDB 8.3.3.1	Make up deficiency in backfill material (provisional)		
C390	8.3.3.1 a)	From other necessary excavations on site	m^3	50.00
	8.3.3.1 c)	By importation from commercial source (As approved by the Employer's Agent)		
C400		a) Sand	m^3	200.00
C410		b) Up to 37mm stone any thickness	m^3	750.00
C420		c) Extra over for 5% cement stabilized backfill on items C400 & C410 where ordered by the Employers Agent	m^3	100.00
C430	8.3.3.3	Compaction in road reserve	m^3	48.00
	8.3.4	PARTICULAR ITEMS		
	PSDB 8.3.4	a) Timber Shoring trench for long length excavations (for depths):		
C440		i) 1,0m - 2,0m	m	220.00
C450		ii) 2,0m - 3,0m	m	350.00
C460		iii) 3,0m - 4,0m	m	400.00
C470		iv) 4,0m - 5,0m	m	450.00
C480		v) 5,0m - 6,0m	m	500.00
C490		vi) 6,0m - 7,0m	m	550.00

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C500		vii) 7,0m - 8,0m	m	600.00
		b) Timber Shoring for point repairs and manhole or sand/grit traps installation		
C510		i) 1,0m - 2,0m	m²	200.00
C520		ii) 2,0m - 3,0m	m²	250.00
C530		iii) 3,0m - 4,0m	m²	300.00
C540		iv) 4,0m - 5,0m	m²	350.00
C550		v) 5,0m - 6,0m	m²	400.00
C560		vi) 6,0m - 7,0m	m²	450.00
C570		vii) 7,0m - 8,0m	m²	500.00
	PSDB 8.3.4	a) Sheetpile Shoring trench for long length excavations (for depths):		
C580		i) 1,0m - 2,0m	m	220.00
C590		ii) 2,0m - 3,0m	m	350.00
C600		iii) 3,0m - 4,0m	m	400.00
C610		iv) 4,0m - 5,0m	m	450.00
C620		v) 5,0m - 6,0m	m	500.00
C630		vi) 6,0m - 7,0m	m	550.00
C640		vii) 7,0m - 8,0m	m	600.00
		b) Sheetpile Shoring for point repairs and manhole or sand/grit traps installation		
C650		i) 1,0m - 2,0m	m²	220.00
C660		ii) 2,0m - 3,0m	m²	350.00
C670		iii) 3,0m - 4,0m	m²	400.00
C680		iv) 4,0m - 5,0m	m²	450.00
C690		v) 5,0m - 6,0m	m²	500.00
C700		vi) 6,0m - 7,0m	m²	550.00
C710		vii) 7,0m - 8,0m	m²	600.00
	8.3.5	EXISTING SERVICES		
	8.3.5 a)	Services that intersect a trench (temporary protection)		
C720		a) LV electrical cables	No.	150.00
C730		b) HV electrical cables	No.	150.00
C740		c) House water connections	No.	100.00
C750		d) Water mains	No.	200.00
C760		e) Water erf connections (Up to 50mm dia)	No.	100.00
C770		f) Bulk water mains	No.	190.00
C780		g) Stormwater pipes up to 600mm dia.	No.	350.00
C790		h) Stormwater pipes over 600mm dia.	No.	360.00
C800		i) Sewer erf connections (Up to 110mm dia)	No.	100.00
C810		j) Sewers pipes up to 300 mm dia.	No.	180.00
C820		k) Sewer pipes over 300 mm dia.	No.	250.00
C830		l) Telecommunication cables in ducts	No.	150.00
C840		m) Telecommunication optic fibre cables	No.	150.00
C850		n) Stormwater channels and kerbs	No.	150.00
	8.3.5 b)	Services that adjoin a trench (temporary protection)		
C860		a) LV electrical cables	m	20.83
C870		b) HV electrical cables	m	30.00
C880		c) Water mains	m	30.00
C890		d) Water erf connections (Up to 50mm dia)	m	30.00
C900		e) Bulk water mains	m	30.00
C910		f) Stormwater pipes up to 600mm dia.	m	30.00
C920		g) Stormwater pipes over 600mm dia.	m	30.00
C930		h) Sewer erf connections (Up to 110mm dia)	m	30.00
C940		i) Sewers pipes up to 300 mm dia.	m	30.00

C950		j) Sewer pipes over 300 mm dia.	m	30.00
C960		k) Telecommunication cables in ducts	m	30.00
C970		l) Telecommunication optic fibre cables	m	30.00
C980		m) Stormwater channels and kerbs	m	30.00
	PSDB 8.3.6	FINISHING (REINSTATEMENT)		
	PSDB 8.3.6.1	Reinstate road surfaces complete with all courses from commercial sources:		
		LAYER WORKS		
	1200 DM	Selected layer		
C990	8.3.5	G7 Selected layer from commercial sources, constructed in 150mm layers compacted to 93% MOD AASHTO (100% for sand)	m^3	290.00
	1200 ME	Subbase		
C1000	8.3.3	Construct subbase with G5 material from commercial sources compacted to 95% of MAASHTO density	m^3	370.00
C1010	ME 8.3.5(d)	Process subbase material by means of cement stabilisation, to produce C4 / C3 subbase layer, compacted to 97 % Mod. AASHTO	m^3	307.50
C1020	8.3.8	Stabilising agent: Portland cement	t	2 383.33
	1200 MF	Base Course		
C1030	8.3.3	Construct base with G4 material from commercial sources compacted to 98% of MAASHTO density	m^3	761.46
	1200 MH	ASPHALT BASE AND SURFACING		
		Asphalt base (BTB) (50/70 bitumen; 28mm max. aggregate)		
C1040		Continuously graded - CCC Type	m^3	190.00
		PRIME COAT		
	8.5.1	Prime coat using:		
		MC-30 Cutback bitumen		
C1050		On Roads	m^2	25.45
C1060		On Sidewalks	m^2	25.45
	8.5.4	ASPHALT SURFACING		
		Roads		
		Continuously graded - CCC Type		
C1070		30mm Thick	m^2	185.00
C1080		40mm Thick	m^2	240.00
C1090		50mm Thick	m^2	280.00
		Continuously graded - COLTO Type Medium		
C1100		30mm Thick	m^2	185.00
C1110		40mm Thick	m^2	185.00
C1120		50mm Thick	m^2	185.00
		Sidewalks		
		Continuously graded - COLTO Type Fine		
C1130		20mm Thick	m^2	165.00
C1140		30mm Thick	m^2	195.00
		Joint sealants		
C1150		Application of waterproofing sealant to asphalt patches ('Colseal' or equivalent)	l	50.00
	PSDB 8.3.6.1	Reinstate other surfaces including the following new layerworks from commercial sources:		
C1160		a) Concrete (30 MPa strength, thickness according to specification, on selected layers as required for sidewalks and driveways)	m^3	1 850.00
	1200 MJ	SEGMENTED PAVING		

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	8.2.2	Concrete interlocking block paving (Class 30, 200x100x60mm thickness) complete with 20mm sand bedding and joint filling sand		
C1170		Grey interlocking pavers	m²	250.00
C1180		Tan interlocking pavers	m²	250.00
C1190		Charcoal interlocking pavers	m²	250.00
C1200		Terracotta interlocking pavers	m²	300.00
		Concrete interlocking block paving (Class 30, 200x100x80mm thickness) complete with 20mm sand bedding and joint filling sand		
C1210		Grey interlocking pavers	m²	250.00
C1220		Tan interlocking pavers	m²	250.00
C1230		Charcoal interlocking pavers	m²	250.00
C1240		Terracotta interlocking pavers	m²	300.00
		Concrete straight edge bond paving blocks (Class 30, 200x100x50mm thickness) complete with 20mm sand bedding and joint filling sand		
C1250		Grey interlocking pavers	m²	250.00
C1260		Tan interlocking pavers	m²	250.00
C1270		Charcoal interlocking pavers	m²	250.00
C1280		Terracotta interlocking pavers	m²	300.00
		Concrete straight edge bond paving blocks (Class 30, 200x100x70mm thickness) complete with 20mm sand bedding and joint filling sand		
C1290		Grey interlocking pavers	m²	250.00
C1300		Tan interlocking pavers	m²	250.00
C1310		Charcoal interlocking pavers	m²	250.00
C1320		Terracotta interlocking pavers	m²	300.00
		Concrete cobble paving blocks (Class 30, 50mm thickness) complete with 20mm sand bedding and joint filling sand		
C1330		Single charcoal cobble	m²	300.00
C1340		Double charcoal cobble	m²	350.00
		Concrete cobble paving blocks (Class 30, 70mm thickness) complete with 20mm sand bedding and joint filling sand		
C1350		Single charcoal cobble	m²	450.00
C1360		Double charcoal cobble	m²	500.00
		(a) Clay block paving (Class PA, 200x100x50mm thickness) complete with 20mm sand bedding and joint filling sand		
C1370		(i) De Hoop Red	m²	600.00
C1380		(ii) Wheatstone	m²	650.00
		(b) Clay block paving (Class PA, 222x100x73mm thickness) complete with 20mm sand bedding and joint filling sand		
C1390		(i) De Hoop Red	m²	600.00
C1400		(ii) Wheatstone	m²	650.00
C1410		Installation of pavers (Paver costs measured separately) on 20mm sand bed.	m²	174.33
		Extra-over items C1410 for (provisional):		
C1420		i) Material cost of new pavers not included in the Schedule of Rates (This Provisional Sum not to exceed R100 000 per Works Order)	Prov Sum	100 000.00
C1430		ii) Handling costs and profit for item C1420	%	12.00%
C1440	8.2.3	Cutting of blocks against edge restraints	m	27.50

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		LANDSCAPING		
C1450		Grass and lawns	m²	65.00

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SCHEDULE D: SEWERS

	SANS 1200 LB	BEDDING (PIPES)		
	PSLB 8.2.1	Provision of bedding and selected fill material from trench excavations		
D10		a) Selected granular material	m^3	52.08
D20		b) Selected fill material	m^3	52.08
	8.2.2	Supply only of bedding material by importation		
	PSLB 8.2.2.3	From commercial sources (provisional)		
D30		a) Selected granular material	m^3	325.00
D40		b) Selected fill material	m^3	330.00
D50		c) 19 mm stone on top of a geofabric material for trench bottom	m^3	650.00
	PSLB 8.2.6	Geotextile / Geomembrane wrapped around 19mm stone bedding with 300mm overlay:		
D60		a) A2 or similar approved	m^2	30.00
	SANS 1200 LD	SEWERS		
		PIPEWORK (NEW PIPES)		
	PSLD 8.2.1	Supply, lay, joint, bed Class B, including testing and couplings		
		1) Class 34 uPVC Pipes to SABS 791 (heavy duty)		
D70		a) 160 mm diam.	m	220.00
D80		b) 200 mm diam.	m	350.00
D90		c) 250 mm diam.	m	500.00
D100		d) 300 mm diam.	m	790.00
D110		(e) 350 mm diam.	m	724.33
D120		(f) 400 mm diam.	m	1 100.00
		2) uPVC Sewer Pipes to SABS 791 (Class 34)		
		Short lengths (less than and up to 15m)		
D130	8.2.6	a) 110 mm diam. to erf connections	m	100.00
D140		b) 160 mm diam. to point repairs	m	220.00
D150		c) 200 mm diam. to point repairs	m	350.00
D160		d) 250 mm diam. to point repairs	m	500.00
D170		e) 300 mm diam. to point repairs	m	800.00
D180		f) 350 mm diam. to point repairs	m	1 000.00
D190		g) 400 mm diam. to point repairs	m	1 100.00
		Supply, Lay, joint, bed and test sewer pipes with flexible bedding for the following pipe sizes:		
		Structured wall HDPE class SN8 (8KN/m^2) (SANS Approved) or equivalent with stainless steel couplings and external jointing protection		
D200		a) 400 mm diam.	m	1 882.83
D210		b) 500 mm diam.	m	2 335.88
D220		c) 600 mm diam.	m	3 060.54
D230		d) 700 mm diam.	m	4 001.08
D240		e) 800 mm diam.	m	5 069.71
D250		f) 900 mm diam.	m	6 800.46
D260		g) 1000 mm diam.	m	9 341.63
		JOINTING (POINT REPAIRS)		

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		Cut into existing pipeline and connect new pipeline with special adaptors and make good, including hand excavation, dispose of surplus material and supply special adaptors		
D270		(a) 110 mm diam.	No.	2 000.00
D280		(b) 160 mm diam.	No.	2 200.00
D290		(c) 200 mm diam.	No.	2 500.00
D300		(d) 250 mm diam.	No.	3 000.00
D310		(e) 300 mm diam.	No.	3 100.00
D320		(f) 350 mm diam.	No.	5 000.00
D330		(g) 400 mm diam.	No.	5 500.00
		SPECIALS AND FITTINGS FOR HOUSE CONNECTIONS		
	8.2.2	Supply, lay, joint, bed (Class B, incl. cut pipes where require), specials and fittings:		
		uPVC Fittings to SABS 791class 34		
		Y Junctions (45 deg)		
D340		a) 110 mm x 110 mm	No.	220.00
D350		b) 160 mm x 110 mm	No.	350.00
D360		c) 160 mm x 160 mm	No.	500.00
D370		d) 200 mm x 160 mm	No.	700.00
D380		e) 200 mm x 200 mm	No.	900.00
		Bends		
D390		a) 110 mm x 11.25 deg.	No.	150.00
D400		b) 110 mm x 22.5 deg.	No.	100.00
D410		c) 110 mm x 45 deg.	No.	110.00
D420		Endcaps (110 mm)	No.	20.00
		Supply and install UPVC sewer non-return valve		
D430		a) 110 mm diam.	No.	1 500.00
D440		a) 160 mm diam.	No.	2 000.00
	PSLD 8.2.3	MANHOLES		
		Complete as per detail drawing (1000 mm precast concrete rings with dolomitic aggregate)		
D450		(a) 1m to 2m depth	No.	10 000.00
D460		(b) 2m to 3m depth	No.	12 500.00
D470		(c) 3m to 4m depth	No.	15 500.00
D480		(d) 4m to 5m depth	No.	18 500.00
D490		(e) 5m to 6m depth	No.	20 000.00
D500		(f) 6m to 7m depth	No.	25 000.00
D510		(g) 7m to 8m depth	No.	30 000.00
		Complete as per detail drawing (1200 mm precast concrete rings with dolomitic aggregate)		
D520		(a) 1m to 2m depth	No.	11 000.00
D530		(b) 2m to 3m depth	No.	14 000.00
D540		(c) 3m to 4m depth	No.	18 000.00
D550		(d) 4m to 5m depth	No.	22 000.00
D560		(e) 5m to 6m depth	No.	26 000.00
D570		(f) 6m to 7m depth	No.	30 000.00
D580		(g) 7m to 8m depth	No.	35 000.00
		Complete as per detail drawing (1500 mm precast concrete rings with dolomitic aggregate)		
D590		(a) 1m to 2m depth	No.	12 000.00

D600		(b) 2m to 3m depth	No.	16 000.00
D610		(c) 3m to 4m depth	No.	20 000.00
D620		(d) 4m to 5m depth	No.	24 000.00
D630		(e) 5m to 6m depth	No.	28 000.00
D640		(f) 6m to 7m depth	No.	32 000.00
D650		(g) 7m to 8m depth	No.	36 000.00
	PSLD 8.2.11	Connection to sewer at existing manholes		
D660		a) Break into existing sewer manhole and connection of new sewer	No.	1 850.00
		b) Construct new manhole over live sewer		
D670		(a) 1m to 2m depth	No.	13 000.00
D680		(b) 2m to 3m depth	No.	16 500.00
D690		(c) 3m to 4m depth	No.	20 000.00
D700		(d) 4m to 5m depth	No.	23 000.00
D710		(e) 5m to 6m depth	No.	26 000.00
D720		(f) 6m to 7m depth	No.	30 000.00
D730		(g) 7m to 8m depth	No.	35 000.00
D740		Brickwork to repaired manholes	m²	822.92
		Plaster work and grouting to repaired manholes		
D750		(a) Grout to internal walls	m²	230.71
D760		(b) Grout to benching	m²	234.83
		Minor alteration of existing manholes		
		Raise manhole by :		
D770		(a) up to 500mm	No.	2 289.17
D780		(b) between 500mm and 1000mm	No.	3 252.58
D790		Extra-over item D770 – D780 for replacement of cover slab, covers and frames	No.	4 500.00
D800	8.2.9	Marker posts	No.	217.67
		Kerb Markers		
		Cut kerb face and paint white to mark house connections		
D810		a) House connections	No.	80.29
		OVERPUMPING		
	PS-TA 6.1	Temporary works: Control sewerage by overpumping: max. length 100 m per one overpumping system: (supply all equipment: pump, sealed pipeline, sump if needed, power supply etc)		
D820		(1) up to 200 mm diam. pipes	h	400.00
D830		(2) Up to 300 mm diam. pipes	h	410.00
D840		(3) Up to 400 mm diam. pipes	h	420.00
D850		(4) Up to 500 mm diam. pipes	h	430.00
	PS-TA 6.2	Extra over for provision of additional pipe when length exceeds 100m		
		a) Layflat hosing		
D860		(1) up to 200 mm diam. pipes	m	30.00
D870		(2) Up to 300 mm diam. pipes	m	35.00
D880		(3) Up to 400 mm diam. pipes	m	40.00
D890		(4) Up to 500 mm diam. pipes	m	45.00
		b) Rigid piping		
D900		(1) up to 200 mm diam. pipes	m	89.17
D910		(2) Up to 300 mm diam. pipes	m	158.04

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D920		(3) Up to 400 mm diam. pipes	m	310.08
D930		(4) Up to 500 mm diam. pipes	m	597.04
		CCTV INSPECTION OF SEWER LINE		
		CCTV site establishment		
D940		(a) less than 300m	Sum	2 000.00
D950		(b) more than 300m	Sum	3 000.00
	PS-TC 6.1	CCTV camera inspection and assessment		
		for nominal diameters		
D960		(a) 100mm / 150mm / 200mm	m	34.00
D970		(b) 225mm / 250mm / 300mm	m	35.00
D980		(c) 350mm / 375mm / 400mm	m	41.67
D990		(d) 500mm to 700mm	m	48.33
D1000		(e) 800mm to 1000mm	m	56.67
D1010	PS-TC 6.2	Manhole Inspection	No.	998.42
		BULK PIPE CLEANING AND ROOT REMOVAL		
	PS-TD 8.1	Bulk cleaning of pipelines for nominal diameters		
D1020		(a) 100mm / 150mm / 200mm	m	70.00
D1030		(b) 225mm / 250mm / 300mm	m	80.00
D1040		(c) 350mm / 375mm / 400mm	m	90.00
D1050		(d) 500mm to 700mm	m	100.00
D1060		(e) 800mm to 1000mm	m	130.00
D1065		Manhole cleaning	No.	1 277.67
	PS-TD 8.2	Root cutting and removal in pipelines for nominal diameters		
D1070		(a) 100mm / 150mm / 200mm	m	100.00
D1080		(b) 225mm / 250mm / 300mm	m	110.00
D1090		(c) 350mm / 375mm / 400mm	m	130.00
D1100		(d) 500mm to 700mm	m	160.00
D1110		(e) 800mm to 1000mm	m	240.00
		SAND / GRIT TRAPS		
	PS-TE 9.1	Construction of Sand/Grit Traps in the following depth range:		
D1120		(a) Up to 2m depth	No.	31 934.67
D1130		(b) Up to 3m depth	No.	40 866.88
D1140		(c) Up to 4m depth	No.	49 822.46
D1150		(d) Up to 5m depth	No.	81 500.00
D1160		(e) Up to 6m depth	No.	98 500.00
D1170		(f) Up to 7m depth	No.	117 500.00
D1180		(g) Up to 8m depth	No.	135 000.00

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SCHEDULE E: CONCRETE KERBING AND CHANNELLING

	SANS 1200 MK	CONCRETE KERBING AND CHANNELLING		
	8.2.1	Precast concrete kerbing (SANS 927:2013):		
		a) Straight:		
E10		i) Mountable kerb to match (CK5)	m	230.00
E20		ii) Mountable kerb to match (MK10)	m	220.00
E30		iii) Barrier Kerb (BK1)	m	250.00
E40		iv) Barrier Kerb (BK2)	m	250.00
E50		v) Barrier Kerb (BK4)	m	260.00
E60		vi) Edging Kerb (E1)	m	140.00
E70		vii) Edging Kerb (E3)	m	180.00
E80		viii) Channel (C1)	m	220.00
E90		ix) V - Channel (2 x C1)	m	409.00
E100		x) Cast-in-situ kerbing (25MPa/19mm concrete)	m	229.00
E110		xi) Combined kerb and infall channel to match existing - (Transition Kerb)	m	300.00
		b) Curved kerbing over 1m up to and including 4m:		
E120		i) Mountable kerb to match (CK5)	m	240.00
E130		ii) Mountable kerb to match (MK10)	m	230.00
E140		iii) Barrier Kerb (BK1)	m	260.00
E150		iv) Barrier Kerb (BK2)	m	260.00
E160		v) Barrier Kerb (BK4)	m	270.00
E170		vi) Edging Kerb (E1)	m	150.00
E180		vii) Edging Kerb (E3)	m	190.00
E190		viii) Channel (C1)	m	230.00
E200		ix) V - Channel (2 x C1)	m	460.00
E210		x) Cast-in-situ kerbing (25Mpa/19mm concrete)	m	240.00
E220		xi) Combined kerb and infall channel to match existing - (Transition Kerb)	m	310.00
		c) Curved kerbing over 4m up to and including 20m:		
E230		i) Mountable kerb to match (CK5)	m	250.00
E240		ii) Mountable kerb to match (MK10)	m	240.00
E250		iii) Barrier Kerb (BK1)	m	270.00
E260		iv) Barrier Kerb (BK2)	m	270.00
E270		v) Barrier Kerb (BK4)	m	280.00
E280		vi) Edging Kerb (E1)	m	160.00
E290		vii) Edging Kerb (E3)	m	200.00
E300		viii) Channel (C1)	m	240.00
E310		ix) V - Channel (2 x C1)	m	470.00
E320		x) Cast-in-situ kerbing (25Mpa/19mm concrete)	m	250.00
E330		xi) Combined kerb and infall channel to match existing - (Transition Kerb)	m	320.00
	SABS 1200 MM	ANCILLARY ROADWORKS		
		ROAD MARKINGS		
	PSMM 8.4.1	Non-reflectorised paint applied at nominal rate of 0,42 l/m² for:		
		a) White lines (Broken or unbroken)		
E340		i) 100 mm wide	km	4 300.00

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E350		ii) 300 mm wide	km	3 500.00
		b) Yellow lines (Broken or unbroken)		
E360		i) 100 mm wide	km	4 500.00
E370		ii) 300 mm wide	km	8 500.00
E380		c) White characters and symbols	m^2	150.00
E390		d) Yellow characters and symbols	m^2	160.00
E400		e) Traffic island markings (any colour)	m^2	170.00
	8.4.2	Variation in rate of application from that stated for item PS MM 8.4.1		
E410		a) White paint	l	74.38
E420		b) Yellow paint	l	74.38

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SCHEDULE F: HORIZONTAL DIRECTIONAL DRILLING

	PS-TG	HORIZONTAL DIRECTIONAL DRILLING, IMPACT MOLING AND SLIPLINING		
		Supply of pipes for Horizontal Directional Drilling, Impact Moling and Sliplining		
F10		110mm HDPE PE 100 PN 10	m	160.00
F20		160mm HDPE PE 100 PN 10	m	320.00
F30		200mm HDPE PE 100 PN 10	m	500.00
F40		250mm HDPE PE 100 PN 10	m	700.00
F50		315mm HDPE PE 100 PN 10	m	1 200.00
F60		355mm HDPE PE 100 PN 10	m	1 500.00
F70		400mm HDPE PE 100 PN 10	m	2 000.00
		Excavation for launcing and receiving pits in all materials, backfill, compact and dispose of surplus material material for all pipe diameters for the following depths:		
F80		a) Exceeding 0,0 m but not exceeding 1,0 m	m^3	130.00
F90		b) Exceeding 1,0 m but not exceeding 2,0 m	m^3	150.00
F100		c) Exceeding 2,0 m but not exceeding 3,0 m	m^3	280.00
F110		d) Exceeding 3,0 m but not exceeding 4,0m	m^3	350.00
F120		e) Exceeding 4,0 m but not exceeding 5,0 m	m^3	450.00
F130		f) Exceeding 5,0 m but not exceeding 6,0 m	m^3	550.00
F140		g) Exceeding 6,0 m but not exceeding 7,0 m	m^3	700.00
F150		h) Exceeding 7,0 m but not exceeding 8,0 m	m^3	900.00
		Extra-over items F80 to F150 incl. for (provisional):		
F160		i) Intermediate material	m^3	190.00
F170		ii) Hard rock	m^3	750.00
		Horizontal Directional Drilling establishment		
F180		Fixed charges	Sum	10 289.04
F190		Time related charges	day	1 523.83
	PS-TG 8.1	Installation via Horizontal Directional Drilling of pipes (Pipes measured separately)		
F200		110mm HDPE PE 100 PN 10	m	200.00
F210		160mm HDPE PE 100 PN 10	m	400.00
F220		200mm HDPE PE 100 PN 10	m	650.00
F230		250mm HDPE PE 100 PN 10	m	900.00
F240		315mm HDPE PE 100 PN 10	m	1 500.00
F250		355mm HDPE PE 100 PN 10	m	2 000.00
F260		400mm HDPE PE 100 PN 10	m	2 500.00
		Impact Moling establishment		
F270		Fixed charges	Sum	8 675.00
F280		Time related charges	day	1 618.75
	PS-TG 8.1	Installation via Impact Moling of pipes (Pipes measured separately)		
F290		110mm HDPE PE 100 PN 10	m	300.00
F300		160mm HDPE PE 100 PN 10	m	600.00
F310		200mm HDPE PE 100 PN 10	m	850.00
F320		250mm HDPE PE 100 PN 10	m	1 000.00
F330		315mm HDPE PE 100 PN 10	m	2 000.00
F340		355mm HDPE PE 100 PN 10	m	2 500.00

F350		400mm HDPE PE 100 PN 10	m	3 000.00
		Weld, and install HDPE flange adapter with stub and stainless steel backing flange for connection between uPVC and HDPE		
F360		110mm dia	No.	2 000.00
F370		150mm dia	No.	3 500.00
F380		200mm dia	No.	5 100.00
F390		250mm dia	No.	8 000.00
F400		315mm dia	No.	11 000.00
F410		355mm dia	No.	11 878.67
F420		400mm dia	No.	17 500.00
		SLIPLINING		
		Sliplining establishment		
F430		Fixed charges	Sum	4 500.00
F435		Time related charges	day	1 450.00
	PS-TH 8.1	Installation and sliplining of pipes (Pipes measured separately)		
F440		110mm HDPE PE 100 PN 10	m	318.50
F450		160mm HDPE PE 100 PN 10	m	374.00
F460		200mm HDPE PE 100 PN 10	m	445.42
F470		250mm HDPE PE 100 PN 10	m	507.13
F480		315mm HDPE PE 100 PN 10	m	595.00
F490		355mm HDPE PE 100 PN 10	m	676.42
F500		400mm HDPE PE 100 PN 10	m	787.00
	PS-TH 8.2	Grouting of annulus		
F510		Grouting of annulus	m^3	1 000.00
	PS-TG 8.2	Manhole Chamber Tie-ins		
		1) Tie HDPE Sewer Main into new manhole chamber		
F520		a) 160mm diameter	No	1 000.00
F530		b) 200mm diameter	No	1 500.00
F540		c) 250mm diameter	No	1 800.00
F550		d) 315mm diameter	No	2 000.00
F560		e) 355mm diameter	No	2 500.00
F570		f) 400mm diameter	No	3 000.00
		2) Tie HDPE Sewer Main into existing manhole chamber		
F580		a) 160mm diameter	No	1 000.00
F590		b) 200mm diameter	No	1 500.00
F600		c) 250mm diameter	No	2 000.00
F610		d) 315mm diameter	No	2 500.00
F620		e) 355mm diameter	No	3 000.00
F630		f) 400mm diameter	No	3 500.00
		DRILLING MUD / BENTONITE REMOVAL		
		Bentonite spoiled off site at an accredited dumping facility		
F640		1 x Super Sucker Vacuum truck unit	day	7 500.00
F650		2 x Super Sucker Vacuum truck units	day	15 000.00
F660		Disposal cost for dumping the drilling mud, including bentonite at an accredited landfill site	Ton	1 606.67
F670		Testing of bentonite sample	Sum	2 000.00
		Bentonite spoiled on site if allowed to stockpile and dry before removal		

[redacted]

F680		20 ton Excavator	day	7 000.00
F690		Holding pond	m^3	250.00
F700		Removal and Disposal at a location provided by the contractor (include all associated costs for removal)	m^3	389.33

[redacted]

DECLARATION (In respect of completeness of Tender)

City of Cape Town
Tower Block, Civic Centre
12 Hertzog Boulevard
CAPE TOWN

I/we, the undersigned, do hereby declare that these are the properly priced Schedule of Rates forming Part C2.2 of this Contract Document containing 35 pages in consecutive order upon which my/our tender for **TENDER NO. 83Q/2023/24: TERM TENDER FOR LAYING OF NEW SEWER MAINS** has been based. If I/we have submitted a printed version of the Schedules of Rates, I/we warrant that no amendments have been made to it from the original, other than amendments issued in any Addenda in terms of Clause C.3.2 in Part T1.2 Tender Data.

[redacted]

SIGNA[redacted]DERER/S

24/11/23

DATE

[redacted]

PART C3: SCOPE OF WORK

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C3.2	Engineering	82 – 83
C3.3	Procurement	84 – 85
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Status

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

Drawings
Scope of Work (Parts C3.1, C3.4, C3.5 and C3.6)
Particular Specifications
COLTO Standardised Specifications

[redacted]

C3.1 Description of the Works

CONTENTS

3.1.1 EMPLOYER'S OBJECTIVES
3.1.2 OVERVIEW OF THE WORKS
3.1.3 EXTENT OF THE WORKS
3.1.4 LOCATION OF THE WORKS
3.1.5 TEMPORARY WORKS

3.1.1 EMPLOYER'S OBJECTIVES

The Employer's objectives are for the repair or upgrading or replacement of existing sewer lines or manholes and the installation of new sewer lines, manholes and sand /grit traps to the sewerage reticulation infrastructure in the City of Cape Town municipal area using open trench excavation. The works will mostly be executed in a developed urban environment.

The description of the project contained in the Scope of Work is merely an outline of the Contract Works and shall not limit the work to be carried out by the Contractor under this Contract. Details of some of the major items are given in this section and approximate detailed quantities for each type of work to be carried out in accordance with the Contract Documents are included in the Schedule of Rates.

3.1.2. OVERVIEW OF THE WORKS

This tender covers the installation of new sewer lines, manholes and sand /grit traps to the sewerage reticulation infrastructure and repair or upgrading or replacement of existing sewers and manholes. The Service Provider will also have to supply all materials and resources for the works.

Work will be awarded as Works Projects as and when required by the City of Cape Town for the duration of the term tender contract and are to be executed by contractors allocated Works Projects through a secondary selection process out of the panel of contractors. The Works Projects may be located anywhere within the City of Cape Town municipal area.

3.1.3. EXTENT OF THE WORKS

Work items under this term tender contract may include any one or more of the following:

- Establishment on site by the contractor
- Setting out of the works
- The supply of labour, tools, equipment, materials and supervision to complete the work
- Accommodation of vehicular traffic and pedestrians during all construction work
- Maintenance of the works during and after construction.
- Excavations
- Dewatering of excavations
- CCTV inspection, assessment and final inspection
- Sewer pipeline cleaning and root removal
- Repairs to or replacement of existing sewer pipelines and manholes
- Laying of new sewer pipelines and connection to existing services
- Construction of new sewer manholes and sand/grit traps

[redacted]

- Isolation of sewer pipelines and overpumping or bypassing of live sewer flows
- Testing of new sewer pipelines
- Reinstatement of roads, kerbs, sidewalks and private gardens
- Providing "As Built" data on completion of the Works Project
- Compliance with the Environmental Management Plan
- Compliance with the Health and Safety Specifications

The Works that are to be carried out will be specified in Works Project contract documents as and when required and as provided for in the Bills of Quantities therein. However, if during the course of construction conditions are found to differ from those anticipated, the Employer's Agent may modify the scope of the work to suit the prevailing conditions and circumstances.

Sewer Mains

The sewers to be replaced or maintained comprise mostly uPVC, AC pipes, fibre-cement pipes, clay pipes, GRP pipes, cast iron pipes, HDPE and pitch-fibre pipes and in some instances concrete pipes. Pipe sizes range from 100 mm diameter up to 1000 mm nominal diameters.

The sewer infrastructure comprises of brick structures, precast units, fibre-cement shafts and insitu casted concrete structures.

A method statement will be needed where replacement is required for pipe diameters larger than 300mm diameter or for all complex projects and should be approved by the employer's representative before any work commences. A method statement that is not accepted by the Employer's Agent will be rejected and the contractor will be required to amend and re-submit the method statement for approval.

3.1.4. LOCATION OF THE WORKS

Each Contractor will be required to work anywhere within the boundaries of the City of Cape Town municipal area as shown on the attached map. The map is included under Part C4: Site Information.

Where ambiguity exists as to the exact location of the boundary (i.e. the boundary is shown as being directly on the road), the boundary shall always be either to the north or east of the road in question.

Site conditions will vary and it is anticipated that most of the work assigned will be within an urban environment, which will range from industrial areas to residential areas.

The rates submitted in the Schedule of Rates shall apply for working anywhere within the City of Cape Town municipal area.

3.1.5 TEMPORARY WORKS

3.1.5.1 SITE FACILITIES AVAILABLE

3.1.5.1.1 Location of Camp Site

If required, the Contractor shall establish his camp at a location identified by himself. The contractor shall negotiate for the use with the affected landowners. The contractor will not be entitled to any extension of time due to a delay in negotiations or approval from landowners.

Any damage to or desecration of land outside the site shall be made good to the satisfaction of the landowner and the Employer's Agent at the Contractor's expense. The Contractor shall make his own arrangements concerning the provision of water, electricity and other services for his own office.

The Contractor shall submit to the Employer's Agent his proposed siting and layout of all camps, stores, offices etc. within seven (7) days after acceptance of his works project. Proposals for disposal sites for sewage, waste and refuse shall be submitted to the Employer's Agent's Representative for approval.

3.1.5.1.2 Occupation of the Site

Access to the site of the works will be given to the Contractor on the Commencement Date

[redacted]

The site of the works shall consist of all the separate areas associated with the work to be constructed under the Works Project, including the construction camp, any storage area on the site which the Contractor may require in addition to the area required for construction of the works and special works as defined by the limits of construction shown on the drawings, plus such additional length of road that is necessary for the erection of the traffic accommodation road signs on the approaches to the works.

The site of the works includes portions of existing public roads and footpaths, which will remain in use during the course of the work. Every effort shall be made by the Contractor to minimise the disruption to existing pedestrian and traffic flows during construction. No roads or traffic lanes may be closed without the prior written approval of the Employer's Agent and traffic shall be accommodated as shown on the drawings.

Where existing roads are used, they shall be protected from damage by extraordinary traffic. The Contractor shall immediately repair any damage done by him to fences, gateways, drains or to any other structure during the execution of the Contract and shall leave everything in the same state as it was found by him.

The Contractor shall as far as possible confine his operations to within the limits of the site or land provided by the Employer, but if this is inadequate for his purpose, he shall make all arrangements for any further land he may require and shall pay all costs and charges in this connection.

The Contractor shall afford all reasonable pedestrian and/or vehicular access to all owners or occupiers of properties abutting the works to the satisfaction of the Employer's Agent.

Workmen employed by the Contractor will not be permitted on private property abutting the works during its progress unless such presence is required to successfully complete the work and permission from the owner/occupier has been granted.

3.1.5.1.3 Source of Water Supply

The Contractor shall make his own arrangements for obtaining potable water for construction and domestic purposes. The reticulation in the existing infrastructure adjacent to the site is the nearest available source of water. The Contractor shall pay for the water at the rates and tariffs determined by the City of Cape Town municipality, including the cost of supplying a temporary standpipe as required.

3.1.5.1.4 Source of Power Supply

The Contractor shall make his own arrangements for obtaining power from the City of Cape Town municipality. If the Contractor chooses not to arrange a temporary electricity supply to the site he will have to provide alternative facilities to supply electricity for whatever purpose.

3.1.5.1.5 Sewerage Connection

The Contractor shall make his own arrangements for a connection to the existing foul sewer main and he shall provide a sufficient number of toilets for his staff. Portable toilets will be acceptable.

3.1.5.2 SITE FACILITIES REQUIRED

No specific facilities are required on the site for the Employer's Agent or his representative, but the Contractor will make a desk and chair available for the Employer's Agent or his representative (in his office at no additional cost) if required.

3.1.5.3 CONSTRUCTION TIME PERIOD

3.1.5.3.1 Time for completion

The time for completion, as stated in the Contract Data in terms of Clause 5.14 of the Conditions of Contract, is the time specified by the Employer in each Works Project. The Contractor shall plan and programme his construction sequence for completion within the time period specified.

3.1.5.3.2 Practical completion of the Works

Notwithstanding that there might be natural or programmed sections of the works that will result in them being completed in their entirety before other sections, no consideration shall be given to the issuing of practical completion certificates for portions of the works. The use of any completed section or portions of the work, whether for unhindered use by the public, the use of a service or for accommodation of traffi while other portions are being constructed, shall not constitute use or occupation by the Employer.

In addition to the listed specified items of work and regardless of the degree of beneficial occupation by the Employer, the works shall be considered for practical completion only if the following criteria also have been met:

(i) The repair and replacement or installation of all new pipelines, manholes, erf connections and sand/grit traps have been installed and successfully tested, and all roadways have been reinstated and tested.

(ii) The written list of outstanding items of work must be completed within 14 days of the list having been issued by the Employer's Agent. Should the contractor fail to complete the work within 14 days, the due Practical Completion date will be amended accordingly.

(iii) Any information in the contractor's possession, which is required by the Employers Agent and has been requested in writing, has been supplied.

3.1.5.3.3 Programme

The tenderer must make provision in his programme and tendered rates for the following constraints in working hours and working methods: (This list is not exhaustive and it is accepted that all other constraints were identified by the Contractor during the site inspection)

Re-surfacing of the crossings of surfaced roads must be completed within 10 days of the excavation. Where new pipes are installed in surfaced roads, the re-surfacing of the trench must be undertaken within one month of commencing with the excavation in that particular road.

3.1.5.3.4 Programme Type

The construction programme shall be in the form of a bar chart or in any other form acceptable to the Employer's Agent. The programme shall be drawn to a horizontal time scale. It shall be activity orientated showing interdependencies and the critical path, clearly related to the items or groups of items reflected in the Schedule of Quantities. It shall indicate the quantity of work that shall be carried out each month, but only major work items need be shown.

The programme shall allow and include for special non-working days and the number of days stipulated in the contract data for inclement weather. The programme shall include resource scheduling and balancing and the cash flow envisaged for the Contract. The critical path shall be clearly shown as a heavy double line.

The Contractor shall note the stipulated method of work and shall clearly indicate this on the construction programme. The proposed work sequence shall be subject to the approval of the Employer's Agent.

The Contractor shall update the construction programme on a monthly basis, taking cognisance of all factors affecting the programme. Due allowance shall be made by the Contractor in the tender sum for the cost of updating the programme. Any claim for extension of time shall be evaluated against the construction programme. Only programmes accepted and approved by the Employer's Agent shall be applicable.

3.1.5.4 FEATURES REQUIRING SPECIAL ATTENTION

3.1.5.4.1 Existing Services

Prior to commencing work, the Contractor shall confer with all Authorities and Departments concerned and obtain the necessary wayleaves for both overhead and underground services affected by the Works and shall satisfy himself that he has obtained all the relevant information required to complete the Contract. The contractor must apply for wayleaves within one (1) day of signing the acceptance form to avoid delays to Works Projects. Any planning wayleaves that the contractor may receive from the Council are not a transfer of rights. The Contractor shall carry out the works with the minimum interference to existing services. He shall co-operate with all Authorities and Departments concerned and he shall be solely responsible for carrying out the following operations and checks:

(i) He shall inform all Authorities and Departments in good time before the correct stage of the construction is reached for the laying and/or relaying of any particular services.

(ii) He shall set out the lines and levels of kerbs, pipes, culverts and any other necessary features of the Contract in order that Authorities and Departments are able to lay and/or relay services correctly.

It shall be clearly understood that obtaining the necessary wayleaves and any extra work, such as the removal of any portion of the Works already executed either by the Contractor or other Authority or Department and its subsequent re-execution, which is caused by the Contractor's failure to observe and carry out his responsibilities as specified, will be at his own cost.

If the Contractor considers that the progress of the works is being retarded by the failure of any Authority or Department to lay, remove or divert pipes, ducts, services, cables or poles within a reasonable time, he shall immediately notify the Employer's Agent in writing, stating clearly the number of days of delay

claimed. The Employer's Agent will then decide whether such a claim is justifiable, and in the event of the claim being accepted he will hand to the Contractor a certificate stating clearly the number of days of delay sanctioned.

The cost of repairing any damage to services, due to miscalculations or negligence on the part of the Contractor or his failure to carry out the duties set out in this Clause, shall be borne by the Contractor.

(a) Protection of Overhead and Underground Services

Services and sub-surface obstructions likely to be affected by the work, based on available records and surveys, have been shown on the drawings. Although every care has been exercised in the presentation of the available data, the Employer cannot and does not vouch for the accuracy or completeness of the information shown. Whenever the Contractor deems it necessary to determine the exact location of an existing service or obstruction, he shall, at his own expense, make any examination that he may consider desirable in advance of the work, and the Employer does not accept any liability for loss, damage or delay to the Contractor as a result of the non-location or inaccurate location of services or obstructions.

Where no underground services are shown on the drawings or scheduled, but the possibility of their presence can be reasonably inferred, the Contractor shall in collaboration with the Employer's Agent, search for such services to establish their positions well in advance of the work. A full report shall then be submitted in good time to the Employer's Agent, to enable the necessary arrangements for the protection, removal or diversion of the services before work is commenced in their vicinity.

In the event of damage to existing services, the Contractor shall take such immediate action as is necessary to prevent further damage or danger to life or property and shall immediately notify the Employer's Agent who will issue instructions as to the necessary repairs or protective measures to be taken. The cost thereof shall be borne by the Contractor irrespective of whether the repairs or protective measures were carried out by him or by or on behalf of the service authority or department concerned.

As soon as an underground service not shown on the drawings is discovered, it shall be deemed to be a known service and the Contractor will be held responsible for any subsequent damage to it. If such service is damaged during the course of its discovery, the Contractor will be reimbursed for the cost of making good such damage, unless it is established by the Employer's Agent that the Contractor did not exercise reasonable diligence and care and that the damage was avoidable.

(b) Existing Services

"Existing service" shall include any service which has been temporarily taken out of service to allow for the execution of the works or which has been taken out of service as a result of an event which necessitated the execution of the works.

(c) Condition of Existing Services

The Contractor acknowledges that he has inspected and examined all known existing services and all existing services subsequently discovered, as contemplated in (a) above and is satisfied that all such services were in an acceptable and serviceable state at the commencement of the works, alternatively, upon discovery thereof as contemplated in (a) above.

In the event of a dispute as to the acceptability and/or serviceability of an existing service at the commencement of the works or upon the discovery of such service, the Contractor shall bear the onus of proving that the service in question was not in an acceptable and/or serviceable state at the commencement of the works.

(d) Maintenance, Protection and Relocation of Existing Services

During the course of the works, all existing services including traffic signals, water mains, sewers and stormwater reticulation, electricity transmission and telephone lines, cables, poles and conduits whether in service or not shall be protected, supported and maintained to the satisfaction of the service authority or department concerned and the Employer's Agent. The Contractor shall bear all costs in this regard.

Where a bank of underground ducts, cables, etc are crossed over a distance of less than 1.0m they shall be regarded as a single crossing. Hydrants under pressure, water main valve covers and manholes shall be kept unobstructed and accessible at all times.

The covers and frames of service manholes, catchpits, water mains, valve boxes and sewers will have to be adjusted where they are affected by the roadworks.

(e) Work in Close Proximity to Existing Services

The Contractor shall note that no mechanical excavators or vibratory type compactors may be used within three (3) metres of any telecommunications or electrical services. No pegs or stakes shall be driven into the ground in the vicinity of underground services unless their exact positions have been determined.

The Contractor's attention is drawn to the following with regard to work done in the proximity of ESKOM and other electrical services:

MACHINERY AND OCCUPATIONAL SAFETY ACT (Act No 6 of 1983) WITH REGULATIONS

D16 (7) Excavations

"The builder or excavator shall ascertain as far as practicable the location and nature of underground services likely to be affected by the excavation and take such steps as may be necessary to prevent danger to persons."

THE ELECTRICITY ACT (Act No 40 of 1958)

Section 51(3): Offences and Penalties

"Any person who without legal right (the proof of which shall be upon him) cuts or damages or interferes with any apparatus for generating, transmitting or distributing electricity, shall be guilty of an offence and liable on conviction to a fine not exceeding R1 000,00 or to imprisonment for a period not exceeding twelve months."

The Contractor shall take the above into account in the drawing up of his construction programme and in the calculation of his tendered rates, and shall note that no additional payment or compensation will be allowed for any additional costs or delays incurred as a result of compliance with these regulations, except as measured and paid under the Items listed in the Schedule of Rates.

The Contractor shall allow all reasonable access to the representatives of any Authority or Department for the purpose of maintaining, laying and/or relaying any services, cables or mains during the period of the Contract.

Permanent alterations to existing services ordered in writing by the Employer's Agent, and for which no separate provision has been made in the Schedule of Rates, will be paid for under dayworks if required.

3.1.5.4.2 Services to be constructed / relocated by others

Where applicable, details of proposed services which will have to be constructed / installed / relocated by others under the Works project will be provided.

3.1.5.4.3 Work on Private Property

The contractor's attention is drawn to the fact that certain of the work will be carried out on and in close proximity property. These properties are shown on the Contract Drawings. Official notices will need to be issued by the Contractor for work on private property. Reasonable notice must be given. This notice period is deemed to be 7 days.

3.1.5.4.4 Protection of Structures on Private Property

The contractor's attention is drawn specifically to the close proximity of the works to existing structures on private property. Insurance is to be arranged by the Contractor in accordance with Clause 8.6.1 of the General Conditions of Contract (2015) to cover accidental damage to these structures, the excess of which is payable by the Contractor in event of a claim.

The Contractor shall take all necessary precautions required in terms of the Occupational Health and Safety Act, Act 85 of 1993 and those regulations under the Machinery and Occupational Safety Act, 1983 (Act No. 6 of 1983) and the Mines and Works Act, 1956 (Act No. 20 of 1956) still remaining in force, including shoring where necessary to ensure the safety of any structure at risk. The contractor's attention is drawn to the specific risks of working in a residential area, with children present. Excavation and open manholes in particular will be supervised and/or secured at all times.

All garden fences and structures disturbed as a result of the works are to be reinstated to the satisfaction of the affected property owner and the Employer's Agent.

3.1.5.4.5 Surveys and Beacons

The Contractor shall preserve, as far as is possible, any existing beacons and use them to place his own beacons for setting out and control of the work under this Contract. The setting-out co-ordinates on the drawings are based on the new WGS 84 (X,Y,Z) co-ordinate system.

[redacted]

Should a Property or a Trigonometrical Survey beacon be buried or displaced by the Contractor, he shall bear the cost of searching for the beacon and, if so instructed, arrange for the checking of its position and/or replacement.

It may be that during the course of the construction of the Works certain pegs or beacons may be lost or disturbed due to unavoidable circumstances such as the close proximity to the works. Prior to commencing any operations in the vicinity of such pegs or beacons, the Contractor shall notify the Employer's Agent that loss or disturbance of such pegs or beacons appears unavoidable. The Employer's Agent may agree in writing that such beacons could not reasonably be preserved, and only those beacons so signed for will be replaced at the Employer's cost.

The cost of replacing pegs or beacons disturbed due to unavoidable circumstances as determined by the Employer's Agent shall be paid for under dayworks if required.

3.1.5.5 Protection of Flora, remedial work and liability for damage

Other than vegetation affected by construction, the Contractor shall take all precautions necessary to protect all existing plants, shrubs, trees, etc, from malicious or accidental damage. When excavating close to trees or shrubs, care must be taken to work as far away as possible with minimum damage to roots. Any damage to vegetation caused by the Contractor or any of his workmen outside the working area, shall be reinstated at the cost of the Contractor. In particular no temporary stock piles may be placed against or over existing plants, shrubs and trees.

3.1.5.6 SECURITY

The Contractor shall take every precaution to ensure safety and to protect the Works from theft and vandalism. The Contract shall be responsible for the safety and security of his personnel, materials on site and the Works in general at all times. The Contract shall therefore acquaint himself with the current situation in the area with regard to safety and security (liaising with the local police as necessary) and shall provide all security measures, including the employment of accredited security services, as deemed necessary to comply with the requirements under this clause on the Contract.

A pay item is included in the Schedule of Rates / Bill of Quantities to cover the cost of taking these precautions, together with any fencing, security guards, and any other incidental security measures, which the Contractor may require for the contract. Should circumstances warrant additional security guards, a pay item for day works has been included in the Schedule of Rates. However, the Employer's Agent must authorise the use of the additional security service prior to commencement thereof

3.1.5.7 STANDARD OF MATERIALS, WORKMANSHIP, TESTING AND PERFORMANCE

The attention of Tenderers is particularly drawn to the high standard of materials, workmanship, testing and performance applicable to his Contract as a whole and he shall convey this requirement to his proposed Sub-Contractors.

The Contractor will carry out control testing of materials and workmanship as required in terms of the specifications. Where necessary, the Employer's Agent may carry out acceptance control testing. The Employer will not pay claims or grant extension of time for delays to the works resulting from the awaiting of test results. Testing as required by the Employer's Agent will be effected as promptly as possible but it is in the Contractors own interest to submit material samples and other components of workmanship for testing in good time to assist in avoiding or minimising delays.

3.1.5.8 WEATHERPROOF PROTECTION FOR WORKERS

All staff required to continue working during rain shall be provided with oilskins and rubber knee boots, or other approved protective clothing and footwear.

3.1.5.9 NIGHT WORK AND WORK ON PUBLIC HOLIDAYS

Where the Contractor requires staff to work overtime, he shall make the necessary arrangements with the Employer's Agent and obtain written approval from the Employer's Agent. The Contractor shall bear the cost of his overtime work.

3.1.5.10 CONSTRUCTION IN CONFINED AREAS

It will be necessary for the Contractor to work within confined and restricted areas. No additional payment will be made for work done in such areas, despite indications to the contrary in the Standard Specifications.

3.1.5.11 HEALTH AND SAFETY PLAN

Prior to commencing work, the Contractor shall submit a site specific Health and Safety Plan and an Asbestos Work Plan, compiled in accordance with the Health and Safety Specifications in C3.5:

Management to the Employer's Agent for approval. The Contractor may not commence construction without the Employer's Agent's approval of the Health and Safety Plan and the Asbestos Work Plan.

3.1.5.12 ACCOMMODATION OF TRAFFIC

(i) The safety and convenience of the travelling public is to be considered of utmost importance and every effort must be made to ensure that all temporary road signs, cones, flagmen and speed controls are maintained and effective, and that courtesy is extended to the public at all times.

(ii) It is important that the traffic accommodation requirements described in these specifications are adhered to and that all installations meet with the approval of the relevant traffic authority ie the Traffic Manager of the City of Cape Town.

(iii) Work, including the erection and removal of traffic control facilities, shall be executed between sunrise and sunset on Monday to Friday, inclusive. Occupation of existing traffic lanes will only be allowed during daylight hours on normal working days, which are defined as Monday to Friday, inclusive. The existing number of lanes for each traffic movement affected by construction shall not be reduced without the written authorization of the Employer's Agent.

(iv) It should be noted that Saturdays and Sundays are specified as "Special non-working days" in the Contract Data. In terms of Clause 5.8 of the General Conditions of Contract the Employer's Agent's permission has to be obtained for work to be carried out on special non-working days, for which permission shall be applied for at least one (1) week prior to the day.

(v) The travelling public has 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 public roads.

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

(vii) The Contractor may not commence constructional activities before adequate provision has been made to accommodate traffic in accordance with the requirements of these specifications and Chapter 13 of Volume 2 of the South African Road Traffic Signs Manual (SARTSM).

(viii) The Contractor shall submit proposals in connection with all signs and accommodation of traffic to the Employer's Agent for approval.

The traffic shall be accommodated on the existing surfaced carriageway and shoulders. No bypasses or temporary deviations shall be constructed. Accommodation of traffic will generally be carried out by closing off one lane of traffic at a time and accommodating the traffic on the other lane(s). During non-working days and the period of the year end break (construction industry annual shut-down), the Contractor will be required to shut down normal construction activities and ensure that the total surfaced width is available to public traffic. Only emergency work will be allowed. The Contractor will be required to patrol during these non-working periods and ensure that all temporary traffic-control facilities are in place and functional and will have a team who will be required to be on standby for any situation that may arise.

Details of special traffic accommodation for the Works Project will be provided.
Add the following:

No blocking of the road without the approval from the Employer's Agent.

3.1.5.13 PROVISION OF "AS BUILT" DATA

On completion of the "Works Project", the Contractor will be required to submit accurate "As Built" information of the completed works to the Employer's Agent. This information will be in the form of co-ordinates and levels (X,Y,Z) (WGS 84). Refer to Part C3.2: Engineering under point 5. AS-BUILT DATA PROTOCOL.

3.1.5.14 ENVIRONMENTAL REQUIREMENTS

[redacted]

The Contractor shall take particular note of the environmental requirements contained in the Environmental Specifications in Part C3.5: Management.

Personnel and plant shall not enter property beyond the road reserve boundary irrespective of whether or not the boundary is fenced.

The Contractor shall take every precaution to avoid damage to vegetation within that area of the road reserve which falls outside the designated work area is indicated on the drawings. Any damage caused is to be repaired at the Contractor's expense.

Storage and stockpiling of materials within the road reserve will not be permitted without the written consent of the Employer's Agent. Excess material from excavations and waste material shall be spoiled off site at suitable locations.

Details of special environmental requirements for the Works Project will be provided.

[redacted]

C3.2 Engineering

CONTENTS

3.2.1 DESIGN SERVICES AND ACTIVITY MATRIX
3.2.2 EMPLOYER'S DESIGN
3.2.3 DESIGN BRIEF
3.2.4 DRAWINGS
3.2.5 AS-BUILT DATA PROTOCOL

3.2.1 DESIGN SERVICES AND ACTIVITY MATRIX

a) The Employer is responsible for the design of the permanent Works as reflected in the Contract documents unless otherwise stated.

b) The Contractor is responsible for the design of the temporary Works, inclusive of shoring, traffic accommodation and temporary over-pumping of sewage and their compatibility with the permanent Works.

c) The Employer is responsible for specifying the required pipe details.

d) The Contractor shall supply the as-built drawings as detailed under the Contract Data.

3.2.2 EMPLOYER'S DESIGN

The permanent works included in this contract has been designed by the Employer. The detail of the works is indicated in the specifications and drawings which will be issued at "Works Project" stage.

3.2.3 DESIGN BRIEF

The contractor shall be responsible for the design of the temporary works as defined above

3.2.4 DRAWINGS

The drawings, if any, issued with this tender document are attached in order to give an overview of the term tender project.

Construction drawings will, in terms of the Conditions of Contract, be issued to the Contractor by the Employer's Agent, as appropriate, prior to the date for commencement with Works execution, and from time to time as required.

The Works Project shall be constructed in accordance with the issued design drawings, if any.

The Works Projects shall be carried out in accordance with the reduced drawings listed in C5 of the tender documents and form part of the contract documents as Volume 3.

Only figured dimensions shall be used and drawings shall not be scaled unless otherwise instructed.

Construction drawings will, in terms of the Conditions of Contract, be issued to the Contractor by the Employer's Agent's Representative, as appropriate, prior to the date for commencement with Works execution, and from time to time as required.

3.2.5 AS-BUILT DATA PROTOCOL

The Contractor shall be responsible for the preparation of "as built" drawings and shall ensure that accurate as-built records are kept of all infrastructure installed or relocated during the contract. The position of pipe bends, junction boxes, duct ends and all other underground infrastructure shall be given by either co-ordinates, or stake value and offset. Levels must also be given. A marked-up set of drawings shall also be kept and updated by the Contractor. This information shall be supplied to the Employer's Agent's Representative on a regular basis.

Any information in the possession of the Contractor, which the Employer's Agent requires to complete his record drawings shall be supplied to the Employer's Agent's Representative before a certificate of completion will be issued.

The contractor must provide all As-built information in the format as detailed in the "**Protocols Regarding Civil As-built Plans and GIS Data**", which are attached in C3.6 Annexes.

[redacted]

C3.3 Procurement

CONTENTS

3.3.1 PREFERENTIAL PROCUREMENT
3.3.2 SUB-CONTRACTING PROCEDURES

3.3.1 PREFERENTIAL PROCUREMENT

The Works, and Works Projects, shall be executed in accordance with the conditions associated with the granting of preferences detailed in the **Preference Schedule** where preferences are granted in respect of B-BBEE contribution.

The declarations made in the **Preference Schedule** of the framework contract will be used in the evaluation of tender offers as described in clause C.3.11 in Part T1.2 Tender Data. Once appointed to a panel, Contractors will be required, as applicable, to complete the declaration in respect of sub-contractors in the Works Project Acceptance/Refusal Notice for the particular Works Project, in accordance with clauses P.2.1.4 and P.3.4 in Part A1.2 Work Allocation Procedures in the Works Project contract document.

Financial penalties, as described in the **Preference Schedule**, shall be applied in the event that the Contractor is found to have breached and of the conditions contained in the **Preference Schedule** (unless proven to be beyond the control of the Contractor)

Notwithstanding the application of penalties, the Contractor's attention is drawn to other sanctions that may be applied by the Employer (listed in the **Preference Schedule**) with due consideration to the circumstances.

3.3.2SUB-CONTRACTING PROCEDURES

3.3.2.1Monitoring the use of sub-contractors

Notwithstanding the restriction on sub-contracting as described on the **Preference Schedule**, it is recognised that sub-contracting is an integral part of construction, which the conditions of contract make provision for.

In order, however, to comply with the requirements of the **Preference Schedule**, the Contractor shall submit to the Employer's Agent, on a monthly basis, a **B-BBEE Sub-Contract Expenditure Report**. The format of this report is provided in Annex 2 attached.

The Contractor shall submit to the Employer's Agent documentary evidence in accordance with the applicable codes of good practise of the B-BBEE status level of every sub-contractor employed by the Contractor. Until such time as documentary evidence as described above has been submitted to the Employer's Agent, a sub-contractor shall be deemed to be a non-compliant contributor. The Contractor shall furthermore, on the written request of the Employer's Agent, provide documentary evidence showing the value of work sub-contracted to any or all of the sub-contractors employed by the Contractor.

3.3.2.2Procedure for the selection of sub-contractors/suppliers

Where monetary allowances for provisional sums or prime cost items have been provided in the Bills of Quantities in the Works Project contract document, and where the work or items to which the allowances relate are to be executed/supplied by sub-contractors/suppliers, then the following selection process shall be followed in respect of the required sub-contractors/suppliers:

Where the monetary allowance is less than or equal to R300 000, the Contractor shall invite three quotations from suitably qualified sub-contractors/suppliers for the required work or items. The selection of the three sub-contractors/suppliers shall be in consultation with, and to the approval of the Employer's Agent. The evaluation of the quotations received must include a preference points system as described in C.3.11 of the Tender Data.

Where the monetary allowance is in excess of R300 000, an open competitive tender process shall be followed in respect of the selection of a sub-contractor/supplier for the required work or items. In such

circumstances, tender documentation will be prepared by the Employer's Agent in consultation with and to the approval of the Contractor, invitations to tender will be advertised in the media by the Employer's Agent on behalf of the Contractor, and a sub-contractor/supplier will be selected from the responses received, by the Contractor and Employer's Agent in consultation. The evaluation of the offers received must include a preference points system as described in C.3.11 of the Tender Data. The Contractor must satisfy him/herself that the selected sub-contractor/supplier can meet the requirements of the sub-contract /supply agreement and may, on reasonable grounds, elect not to employ a particular sub-contractor/supplier.

In both instances above (less than or equal to R300 000 or in excess of R300 000), the contractual relationship between the Contractor and sub-contractor/supplier shall be as described in Clause 4.4.3 of the General Conditions of Contract.

[redacted]

C3.4 Construction

CONTENTS

3.4.1 TRADE NAMES OR PROPRIETARY PRODUCTS
3.4.2 APPLICABLE STANDARDISED SPECIFICATIONS
3.4.3 PARTICULAR / PROJECT SPECIFIC SPECIFICATIONS
3.4.4 WAYLEAVES, PERMISSIONS AND PERMITS
3.4.5 LOCAL PRODUCTION AND CONTENT
3.4.6 EMPLOYMENT OF SECURITY PERSONNEL
3.4.7 UNIVERSAL ACCESS

3.4.1. TRADE NAMES OR PROPRIETARY PRODUCTS

Bid specifications may not make any reference to any particular trade mark, name, patent, design, type, specific origin or producer, unless there is no other sufficiently precise or intelligible way of describing the characteristics of the work, in which case such reference must be accompanied by the words "or equivalent".

TENDERERS MUST NOTE THAT WHEREVER THIS DOCUMENT REFERS TO ANY PARTICULAR TRADE MARK, NAME, PATENT, DESIGN, TYPE, SPECIFIC ORIGIN OR PRODUCER, SUCH REFERENCE SHALL BE DEEMED TO BE ACCOMPANIED BY THE WORDS 'OR EQUIVALENT"

3.4.2 APPLICABLE STANDARDISED SPECIFICATIONS

The following relevant standardised specifications, as listed below, shall form the Standard Specifications and apply to this contract:

Where reference is made to the standard specifications in this contract, it shall mean the **South African Bureau of Standards Standardized Specification for Civil Engineering Construction SABS 1200**, complete with any corrections and amendments applicable at the time of tendering. Amendments to the standard specifications are bound in the contract documents in Part B: Project Specifications.

Although not bound in nor issued with this document, the following standardised specifications from SABS Standardised Specification for Civil Engineering Construction SANS 1200 shall form part of the contract document and, notwithstanding the provisions of Sub clause 2.2 of SANS 1200 A, the editions specified below shall apply:

Section	Edition	Title
SANS 1200 A	1986	General
SANS 1200 AB	1986	Engineer's Office
SANS 1200 C	1980	Site Clearance
SANS 1200 D	1990	Earthworks
SANS 1200 DB	1989	Earthworks (Pipe Trenches)
SANS 1200 DK		Gabions and Pitching
SANS 1200 DM	1981	Earthworks (Road, Subgrade)
SANS 1200 GA	1983	Concrete (Small works)
SANS 1200 L	1983	Medium Pressure Pipelines
SANS 1200 LB	1983	Bedding (Pipes)
SANS 1200 LC	1981	Cable Ducts
SANS 1200 LD	1982	Sewers
SANS 1200 LE	1982	Stormwater Drainage
SANS 1200 LF	1982	Erf Connections (Water)
SANS 1200 M	1996	Roads (General)
SANS 1200 ME	1981	Subbase
SANS 1200 MF	1981	Base
SANS 1200 MH	1996	Asphalt Base and Surfacing
SANS 1200 MJ	1984	Segmented Paving
SANS 1200 MK	1983	Kerbing and Channelling
SANS 1200 MM	1984	Ancillary Roadworks

Particular and Generic Specifications included after the Standard Specifications Parts A and B, shall apply and form part of this Contract.

3.4.3 PARTICULAR / PROJECT SPECIFIC SPECIFICATIONS

Amendments to the standard specifications are included in this C3.4.2: Project Specifications referring to the standard specifications.

(i) The project specifications form an integral part of the contract documents and supplement the standard specifications.

(ii) In the event of any discrepancy between the project specifications and a part of the standard specifications, the schedule of quantities, or the drawings, the project specifications shall take precedence.

(iii) The standard specifications, which form part of this contract, have been written to cover all phases of work normally required for road contracts, and they may therefore cover items not applicable to this particular contract.

In certain clauses the standard specifications allow a choice to be specified in the project specifications between alternative materials or methods of construction and for additional requirements to be specified to suit a particular contract. Details of such alternatives or additional requirements applicable to this contract are contained in this part of the project specifications. It also contains some additional specifications 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 a 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 followed by a new number. The new numbers follow on the last clause or item number used in the relevant section of the standard specifications.

[redacted]

PSA GENERAL

PSA 3 MATERIALS

PSA 3.1 Quality

All pipes, fittings and materials used in the works, must bear the official standardisation mark of the SANS where applicable. The mark on a pipe shall be visible from above after the pipe is installed.

The Employer's Agent's approval of all manufacturers' instructions with regard to installation of pipelines and sealing of joints between Reinforced Concrete manhole rings is required.

PSA 4 PLANT

PSA 4.1 SILENCING OF PLANT

Replace the contents of sub-clause 4.1 with the following:

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

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

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

Add the following:

The Contractor will be required to obtain a noise exemption permit from the City of Cape Town.

PSA 4.2 CONTRACTOR'S OFFICES, STORES AND SERVICES

Add the following paragraph before the existing first paragraph in sub clause 4.2:

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

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

Delete "and first-aid services" in the second paragraph of sub clause 4.2 and add the following:

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

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

PSA 5 CONSTRUCTION

PSA 5.1 SURVEY

PSA 5.1.1 Setting out of the Works

Add the following to this sub clause:

The Contractor shall be responsible for the true and proper setting out of the Works and for the correctness of the position, levels, dimensions and alignment of all parts of the Works and for the provisions of all necessary instruments, appliances and labour in connection therewith.

The Contractor shall carefully protect and preserve all benchmarks, sight-rails, pegs and other things used in setting out the Works.

The checking of any setting-out or of any line or level by the Employer's Agent shall not relieve the Contractor of his responsibility for the correctness thereof.

If at any time during the progress of the Works, any error shall appear or arise in the position, levels, dimensions or alignment of any part of the Works, the Contractor, on being required to do so by the Employer's Agent, shall at his own expense rectify such error to the satisfaction of the Employer's Agent, but if such error is based on incorrect data supplied in writing by the Employer's Agent or if there is any delay in providing the particulars required, the Contractor shall, in respect of that delay and the cost of such rectification, be entitled to make a claim in accordance with Clause 10 of the General Conditions of Contract.

Add the following new sub clauses:

PSA 5.1.3 As-built survey

The Contractor shall supply the Employer's Agent with as-built survey data for the entire Works (including invert and cover levels, coordinates of valve chambers and points of intersection, etc). The Completion Certificate will not be issued until the as-built survey information had been approved by the Employer's Agent.

The contractor must provide all as-built information in the format as detailed in the as-built protocol. Refer to clauses under Part C3: Scope of Works and C3.6 Annexes included in this document.

PSA 5.2 Watching, Barricading, Lighting and Traffic Crossings

With reference to Sub-clause 5.2 of SANS 1200 A the Contractor shall, in addition to the requirements of Sub-clause 5.1.6 of SANS 1200 D and the Amendments thereto, carry out and maintain such temporary works and provide all temporary road signs, temporary bridging, pipes, deviations and the like, as are necessary to maintain and safeguard the normal flow of public and private, vehicular and pedestrian traffic.

Without limiting the Employer's Agent's right to request additional requirements in terms of the Specifications and the General Conditions of Contract, the following shall be regarded as the minimum requirements for security, temporary fencing and lighting.

PSA 5.2.1 Security

The Contractor shall take every precaution to ensure safety and to protect the Works from theft and vandalism. The Contractor shall be responsible for the safety and security of his personnel, materials on site and the Works in general at all times. The Contractor shall therefore acquaint himself with the current situation in the area with regard to safety and security (liaising with the local police as necessary) and shall provide all security measures, including the employment of accredited security services, as deemed necessary to comply with the requirements under this clause on the Contract.

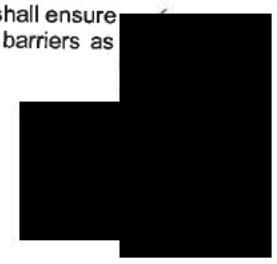
A pay item is included in the Schedule of Rates to cover the cost of taking these precautions, together with any fencing, security guards, and any other incidental security measures, which the Contractor may require for the contract.

PSA 5.2.2 Temporary Fencing of Excavations

The Contractor shall enclose all excavations with stout temporary orange barricade net fencing (1,2m high). In addition he shall erect delineators alongside the road, adjacent to all open excavations, at 5 m intervals, and shall securely fix one line of red-and-white plastic warning tape of an approved design along the top of the fence for its full length.

The Contractor shall place New-Jersey barriers alongside the excavation/ trench to ensure that vehicles remain a safe distance away from the trench and to prevent that a vehicle crashes into the trench. The Contractor shall at all times ensure the safety of the public, traffic, pedestrians and labour is kept at all times and that the safety takes precedence over the construction works.

The Contractor shall backfill and reinstate the pipeline on a daily basis before proceeding with pipe installation at another section. The contractor shall backfill and reinstate as the pipe is being installed to prevent open holes/ excavations. All open trenches during the day shall be temporarily barricaded with orange netting as described above when not working in the area. If no other option exist or due to unforeseen circumstances the contractor cannot backfill the excavation the contractor shall ensure that all excavation/ trenches left open after hours shall be barricaded with new jersey barriers as described above.



PSA 5.2.3 Lighting

Open trenches which constitute a hazard to pedestrians or traffic shall be illuminated by red lights in the following manner:

At least two red lights shall be placed across the ends of open trenches, at a maximum spacing of 2 metres.

Red lights shall be placed along open trenches at 10 m intervals on the road side and at 3 m intervals along the pedestrian side, where applicable.

At least 1 red lamp shall be placed at each of the four corners of each pedestrian crossing and at least 2 red lamps at each of the four corners of each vehicular crossing.

All lamps shall be in position and burning between the hours of sunset and sunrise, and shall be provided with a chain and padlock and locked to suitable posts of prevent theft.

PSA 5.2.4 Accommodation of Traffic

Accommodation of traffic will be required along entrance / exit roads, where the new works tie-in to existing roads. Traffic may have to be deviated onto a half-width roadway or single lane route past / through the construction work area.

When working in roads or across any road, the Contractor shall submit drawings detailing the accommodation of traffic to the Employer's Agent for approval at least 14 days prior to construction. The deviation and signage shall be in accordance with the South African Road Traffic Signs Manual (SARTSM) and the details shown on the drawings.

The Contractor's attention is drawn to the possibility of heavy volume and speed of traffic carried on the affected roads and shall make due allowance therefor in his construction programme.

The Contractor shall liaise and co-operate with the relevant traffic authorities regarding the accommodation of traffic on existing roads. The Contractor shall indemnify the Local Authority, as applicable, from all liabilities in respect of excavations and works on or adjacent to trafficked roads.

The Contractor shall provide and maintain in a proper condition all necessary barricades, lights, warning signals and all direction signs necessary to accommodate the traffic during these stages. The Contractor shall also provide for flagmen at all deviations and/or obstructions where necessary. Open trenches shall be kept to a minimum and shall at all times be adequately demarcated, to protect pedestrians. The Contractor shall also ensure that access to properties affected by the works is maintained at all times.

The Contractor shall be responsible for the safe and easy accommodation of all traffic and the maintenance of the vehicular and pedestrian access to private property for the duration of the contract and at any time when work is undertaken during the maintenance period. **Pedestrian access must be maintained at all times and vehicular access sunset to sunrise.**

Flagmen shall be provided at all access and exit points to the working areas alongside public traffic. Flagmen equipped with high visibility safety jackets, red flags, STOP/GO-RY signs and two-way radios shall be stationed at each end of the road section to ensure an orderly flow of traffic past the work area. All signals must be clear and the flagmen shall be intelligent and responsible personnel. In areas of high traffic density, the assistance of the relevant traffic authorities officials shall be solicited.

All temporary barricades and delineators shall be mounted on portable supports to facilitate their moving. Only sandbags will be permitted for the ballasting of the supports. The sandbags shall consist of durable material and have adequate mass to prevent signs from being blown over by the wind. Sandbags shall be placed as ballast on the supports in front of and behind the sign so as not to obstruct the traffic path past the sign. The cost of the sandbags shall be included in the tendered rate for Accommodation of Traffic.

At night and when directed by the Employer's Agent, red flashing warning lights shall be placed at strategic places such as barricades, obstructions, etc.

No traffic deviations or rerouting shall take place until all barricades / delineators and signs are in place.

Temporary crash barriers shall be constructed when working in heavily traffic areas as instructed by the Employer's Agent.

[redacted]

PSA 5.2.5 Public relations

Prior to the commencement of work the Contractor shall at his own expense and on his own letter with relevant contact numbers, compile and distribute explanatory letters typed in English, Afrikaans and where necessary in Xhosa to each address likely to be affected by the works. These letters are to be vetted by the Employer's Agent prior to distribution. Complaints from members of the public are to be dealt with in a courteous and expedient manner to the entire satisfaction of the Employer's Agent." The notice should be sent 7 days prior to commencement of works.

PSA 5.3 PROTECTION OF STRUCTURES

Replace "Machinery and Occupational Safety Act, 1983 (Act No 6 of 1983)" with "Occupational Health and Safety Act, 1993 (Act No 85 of 1993), as amended," and insert the following after "(Act No. 27 of 1956)": "as amended".

PSA 5.4 PROTECTION OF OVERHEAD AND UNDERGROUND SERVICES

Replace the heading and the contents of sub clause 5.4 with the following

LOCATION AND PROTECTION OF EXISTING SERVICES

PSA 5.4.1 Detection, Location and Exposure of existing services

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

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

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

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

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

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

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

(a) known services, anywhere along the entire lengths of their routes, as may reasonably be deduced from the actual locations at which their positions were verified as aforesaid, due cognizance being taken of such deviations in line and level which may reasonably be anticipated, and

(b) any other service which ought reasonably to have been a known service in accordance with the provisions of this clause.

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

[redacted]

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

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

PSA 5.4.2 Protection during construction

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

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

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

PSA 5.4.3 Alterations and repairs to existing services

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

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

No liability for damages arising from any delay in having such alterations or repairs undertaken will be accepted by the Employer. The Contractor shall provide all reasonable opportunity, access and assistance to persons doing alterations or repairs to existing services.

PSA 5.4.4 Liability for Damage and Insurance

The Contractor's attention is drawn to the relevant clauses of the General Conditions of Contract and Contract Specific Data regarding liability for damage to the Works, or property, or injury to persons arising from the construction of the Works. His attention is also drawn to the General Conditions of Contract regarding insurance to be effected by the Contractor. Special attention is drawn to the exclusions in this insurance policy and particularly to the exclusions regarding consequential damage.

PSA 5.4.5 Access to Services

The Contractor shall allow all reasonable access to any Authority for the purpose of repairing, maintaining, laying and/or relaying any service, cables or mains during the period of this Contract.

The Contractor shall co-operate with other Contractors or Authorities responsible for the installation of water reticulation, electricity cables and communication cables and shall arrange his programme accordingly.

PSA 5.5 Dealing with Water on Works

All water, whether from rain, pipeline failures, or subsurface water and infiltration shall be dealt with in such a way as to ensure the safety of the works.

It is required that adequate preventive measures are taken and maintained to ensure that the works are protected from damage due to water from any source.

The Contractor shall design, construct and maintain all drains and other temporary works necessary for the dewatering and flood protection of the permanent works. All methods of dewatering and flood protection shall be submitted to the Employer's Agent for approval.

In the event of these measures failing to protect the works, action shall be taken immediately to protect the works from further damage, the cost of which shall be carried by the Contractor. The damage caused by the water shall be made good by those responsible for the work damaged, or as directed by the Employer's Agent.

The Contractor shall be responsible for and shall repair at his expense any damage to the foundations, structures or any part of the works caused by floods, water or failure of any part of the dewatering and flood protection works.

Having served their purpose, all temporary works shall be removed, backfilled or levelled such that the operation of the works shall not be affected in any way.

The cost of all flood protection and control of water measures shall be included in the tendered sum for payment in the General Section of the Schedule of Rates.

Where specialist dewatering measures are required for a project and is to be undertaken by a sub-contractor, the cost shall be included for each Works Project and paid for as a separate item.

PSA 5.6 POLLUTION

Add the following:

The Contractor shall take all precautions to ensure that no part of the surroundings is contaminated with petrol, oil, or grease or any other harmful substance. He shall remove any surfacing, which in the Employers Agent's opinion, the Contractor has caused to become contaminated. The Contractor shall dispose of it as instructed by the Employers Agent and shall replace it with material to the Employers Agent's approval. In particular the Contractor will be required to remove from the ground and take away from the site all surplus or spilt concrete, cement grout, stone and sand stockpiles.

The Contractor shall clean up and cart away all rubbish and debris of whatever kind as it accumulates during the Contract, and at completion is to clear away and remove all other rubbish, unused material, temporary erections, plant and debris and leave the site and the whole of the Works and each complete portion thereof clean and tidy and to the satisfaction of the Employers Agent. Both public areas e.g. verges and private property, are to be cleared of stones, debris and other rubbish such that they revert to the condition found before construction. Private property, in particular shall be cleared progressively as the work is completed.

The Contractor shall prevent unnatural contamination and minimise natural contamination of surface or underground water as a result of his activities. Such unnatural contamination could result from the release, accidental or otherwise, of chemicals, oils, fuels, sewage and waste products. In particular cement waste, concrete and contaminated wash water shall be disposed of in a confined area which shall eventually be cleaned and reinstated. Natural contamination could result from excavations, construction water, stormwater carry soil particulars etc.

PSA 5.7 SAFETY

PSA 5.7.1 Occupational Health and Safety Act

The Contractor is to observe the provisions of the Occupational Health and Safety Act 85 of 1993. Working on underground pipelines presents hazardous conditions and the Contractor's attention is drawn to the Occupational Health and Safety Act - General Safety Regulations and in particular Regulation No. 5 – Work in Confined Spaces. The Contractor shall, in terms of the Occupational Health and Safety Act Construction Regulations 2014, address these hazards in his Health and Safety Plan.

The Contractor shall give notice to the Provincial Director, in terms of Clause 3 of the Occupational Health and Safety Act Construction Regulations 2014, prior to the commencement of work on site.

The Contractor must appoint a full time Construction Health & Safety Officer (CSHO) to monitor all works construction sites for compliance.

PSA 5.7.2 Construction hazards

The possibility of dangerous gases being present in pipelines cannot be excluded and the Contractor must therefore ensure adequate ventilation at all times. Generally a series of open manholes will be sufficient but it may be necessary initially to provide forced ventilation. Approved gas testing

[redacted]

equipment and breathing apparatus must be available on site at all times and regular tests are to be made to check for the presence of gases. Unattended open manholes must be protected by at least three traffic cones and the opening is to be covered with an extruded mesh grid or similar.

Some of the existing pipelines to be repaired and/or rehabilitated are of asbestos cement. Working with asbestos cement can present hazardous conditions and the Asbestos Regulation 2001 shall apply.

The safety of the public and all workers and the provision of all necessary safety equipment for the protection of workmen shall be the Contractor's sole responsibility.

PSA 5.8 GROUND AND ACCESS TO WORKS

Add the following:

The Contractor shall:

a) During construction of the Works:

i) improve and maintain to a standard that will ensure the safe execution of the Works, any existing access roads or roads built under this Contract and tracks required by him for the Works,

ii) construct and maintain additional roads as necessary for his purposes to and along the working width of the pipeline route, to a standard required for the efficient construction of the Works.

iii) keep all roads and access tracks used by him watered to minimise dust. The frequency of the watering shall be at least daily when roads and tracks are used by the Contractor, unless it is sufficiently damp after rain.

b) Immediately on completion of each section of the Works:

i) reinstate all private roads used by him, other than those under (ii) below, to at least their original condition,

ii) scarify all roads constructed by him for construction purposes and which are not required by the property owner or the Employer. The area shall be reinstated to at least its original condition.

Add the following sub clauses to clause 5:

PSA 5.9 ENVIRONMENTAL PROTECTION

Construction will take place within an urban area and every precaution must be taken to protect the established vegetation and roadside facilities. It is therefore essential that the Employer's Agent be continually consulted throughout the construction period to ensure that environmental considerations are satisfied.

Failure to show adequate consideration for the environmental aspects of this contract will be sufficient for the Employer's Agent to have the Contractor's representative or any other Contractor's employee(s) removed from the site in terms of the General Conditions of Contract.

The following conditions have been imposed and shall be strictly complied with:

(a) Personnel and plant shall not enter property beyond the boundaries of approved working areas, camp sites and stockpile sites without written authorization by the Employer's Agent irrespective of whether the approved areas are fenced off or not.

(b) The Contractor shall, to the satisfaction of the Employer's Agent, take every necessary precaution to prevent the contamination and pollution of the environment.

The Contractor shall plan his activities such that materials, in so far as is possible, can be transported direct to and placed at the point where they are to be used. However, where utilising materials in this manner is impracticable, it shall be temporarily stockpiled for later loading and transportation to where it will be used. Compensation for stockpiling materials will not be payable directly, but full compensation therefore shall be included in the rates for the various items of work in which the stockpiled material is used.

Stockpiling areas shall be indicated to and approved by the Employer's Agent. Before any stockpiling of material may be done, the site shall be cleaned, and all loose stones or any plant or other material which may cause pollution shall be removed. After the stockpiled material has been removed, the site shall be reinstated as closely as possible to its original condition.

(c) The Contractor shall be responsible for the establishment of a refuse control system for the collection and removal of refuse from the camp site and working areas.

The Contractor shall ensure that waste and surplus food, food packaging plastic and organic waste is not deposited by his employees anywhere on the site except in refuse bins for removal. If his employees are to eat elsewhere on site and not within the camp site, the Contractor shall designate restricted places for eating in his working areas, shall provide adequate refuse containers in all these places and shall remove the refuse and clean up any remaining food containers immediately after mealtimes.

(d) Trees, shrubs or any other existing vegetation on the site may not be removed without approval of the Employer's Agent. Such trees, shrubs or any other vegetation shall remain the property of the employer.

(e) No bituminous material or waste material shall be dumped, even if only as a temporary measure, on the site, but provision shall be made to remove such excess material directly off the site of works

(f) The Contractor shall ensure adequate provision of latrine facilities for his employees.

All costs incurred by the Contractor in complying with PSA 5.9 shall be deemed to be included in the Contractor's general obligations and no separate payment shall be made in this regard.

PSA 5.10 DAYWORK

PSA 5.10.1 General Requirements

This section covers the evaluation and method of measurement and payment for work, ordered by the Employer's Agent in writing, carried out on a daywork basis, all in accordance with Sub clause 6.5.1 of the General Conditions of Contract and Contract Specific Data.

Work will be classified as daywork only if the Employer's Agent considers no other rate in the schedule of quantities appropriate for payment purposes.

Only work ordered in writing by the Employer's Agent to be executed as daywork shall be measured and paid for at the rates tendered in the Schedule of Quantities.

The Contractor shall keep and submit records of the work performed in accordance with the requirements of Sub clause 6.5.3 of the General Conditions of Contract or Contract Specific Data.

PSA 5.10.2 Labour

The tendered rates for labour to be included as daywork charges shall include the salaries and wages of gangers or charge hands working with their gangs but shall exclude the costs of the time of the foremen or supervisors which will be deemed to have been included in the sums tendered for the relevant items in the schedule of quantities.

Gross remuneration, as specified in Sub clause 6.5.1.2.1 of the General Conditions of Contract and Contract Specific Data, will be deemed to include the following:

(a) Basic salary/wage

(b) Overhead charges such as fringe benefits not reflected in basic salary and wages which may include:

i. normal annual bonus

ii. employer's contribution to medical aid

iii. group life assurance premiums

iv. employer's contribution to pension/provident fund

v. all other costs as per letter of appointment

and costs payable due to statutory requirements, which may include:

[redacted]

i. Workmen's Compensation Fund contribution

ii. Unemployment Insurance Fund contributions

iii. District Council levies or the equivalent thereof

The rates tendered for labour shall include for the actual cost of salaries and wages, all overhead charges, profit, liabilities, obligations, risks and incidentals for all workmen to execute work by dayworks.

PSA 5.10.3 Materials

The nett cost price of materials (exclusive of VAT) actually delivered to the site to be included as daywork charges shall include the costs of delivery to the usual points at which materials are received on the site.

Before ordering any material, the Contractor shall submit quotations to the Employer's Agent for his approval, and shall submit such receipts or vouchers to the Employer's Agent as may be necessary for proving the amount claimed.

The percentage tendered as an on-cost on the net cost price of materials shall include for all handling, overheads, profit, liabilities, obligations, risks, incidentals and other on-costs for the supply, delivery and distribution of material for daywork to the individual site(s) where daywork is in progress.

PSA 5.10.4 Plant

The full inclusive hourly cost of operational plant which is available on site or which has been removed without written authorization of the Employer's Agent, to be included as daywork charges will be taken to be the tendered rate which, in the opinion of the Contractor, will be applicable in all respects to the situation and terms of the contract.

The hourly rate tendered or agreed shall constitute the daywork rate for the plant and will be deemed to include all costs for plant operators, consumable stores, fuel maintenance, depreciation, ground-engaging tools and all other incidentals necessary to operate the plant for the purposes for which it was designed.

Failure on the part of the Contractor to state in the schedule of quantities the plant on which his tender is based, shall be considered as a firm agreement on the part of the Contractor that he waives all rights to distinguish between the different types and capacities of plant falling within the description and/or category given, and the Employer's Agent shall have the right to call upon the Contractor to supply any such plant to the site and perform the work as directed by him at the particular tendered rate.

Sixty percent (60 %) of the hourly rate tendered or agreed will be paid in respect of plant which is being employed for daywork, but standing idle on the specific instructions of the Employer's Agent, as full compensation for idle costs of daywork plant.

For plant not on site, the costs of establishing items of plant on the site for daywork on specific instruction of the Employer's Agent will be negotiated with the Contractor at the time that such daywork is contemplated.

PSA 5.9 Site Meetings

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

PSA 5.12 Interruption of service

The maximum time permitted for consumers to be without water, sewerage or stormwater drainage services is six (6) hours. The use of bypass or temporary connections shall be permitted. Notice must be given to affected residents 24 hours prior to shut down.

The Contractor shall provide a 24 hour standby service for the maintenance and repair of any section of work covered by the works contract. He shall provide the Employer's Agent with an effective means

of contacting the standby staff on a 24 hour basis. All repairs necessary to maintain services to residents shall be carried out without delay.

All costs incurred by the Contractor in complying with PSA 5.12 shall be deemed to be included in his rates and no separate payment shall be made in this regard.

PSA 5.13 Supervision

All work to be carried in the Works Projects shall be supervised throughout the duration of the contract by a qualified senior representative of the Contractor who has extensive experience in the type of work to be executed. The representative must be authorized to make all necessary decisions on behalf of the Contractor.

PSA 7 TESTING

PSA 7.1 PRINCIPLES

PSA 7.1.1 Checking

Every completed layer or section of the Works shall be subject to check testing by the Contractor, at his own cost. Once the Contractor has satisfied himself with the standard of his works, he shall provide the Employer's Agent with the results of his check testing indicating that the work is to specification. In order to minimize delays due to testing, the Contractor shall give the Employer's Agent at least 24 hours' notice of when any portion of the works will be completed to his satisfaction so that the Employer's Agent can arrange for his acceptance control testing to be done.

Failure by the Contractor to notify the Employer's Agent or to provide the required information or, where specified, to perform the required test, will be grounds to exempt the Employer from payment for the associated work and for all subsequent work which would be affected by the failure of the work to be tested.

New sewers will be tested as per SANS 1200 specifications. Where portions of a sewer are repaired, only such portions will be required to be tested,

The Employer's Agent will be under no obligation to the Contractor to perform acceptance tests. If the Employer's Agent elects not to perform a particular test after notification by the Contractor, he will issue the Contractor with a written instruction to proceed with the relevant works without the acceptance test being performed.

Nothing contained in this Clause will relieve the Contractor of his responsibilities under the specification or in any way limit the tests which the Employer's Agent may call for or perform in terms of the specification.

PSA 7.1.2 Standard of Finished Work not to Specification

In addition to the provisions of Sub clause 7.1.2, the costs of check testing by the Employer's Agent including tests carried out by commercial laboratories after remedial work by the Contractor shall be borne by the Contractor.

PSA 7.2 Approved Laboratories

Replace the contents of sub-clause 7.2 with the following:

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

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

The cost of such test which meets the specification requirements will be reimbursed to the Contractor in monthly payment certificates. A Provisional Sum has been provided in the Schedule of Rates to allow for the cost of such testing.

The Contractor shall make due allowance for testing procedures in his construction programme.

PSA 7.5 TESTING FOR ENGINEERING SERVICES

PSA 7.5.1 Pipe Trenches

The Employer's Agent may perform acceptance density tests on pipe trenches in bedding layers and at 300 mm backfill intervals. The Contractor shall notify the Employer's Agent when the bedding layer and each 300 mm increment layer have been completed. Backfilling shall be done in accordance with SANS 1200 DB Clause 5.7.

PSA 7.5.2 Sewer Pipes

The Employer's Agent may perform pressure tests and visual inspections in terms of SANS 1200 on sewer pipes after completion of any pipework. Tests for pipework under roads in such a position that repairs could affect the roadworks must be completed before the Contractor may proceed with any layerworks.

Pressure tests may be performed after the bedding layer is placed and compacted, and again when backfilling is complete. The pipework shall only be accepted when the second test has passed.

Sewer manholes shall be visually inspected for ingress of water and shall be watertight.

New installations will be tested against the specified testing pressure as per SANS 1200 LD.

The Contractor shall provide all plugs and testing apparatus.

PSA 7.5.3 Control of Levels (In General)

Invert levels shall be controlled by laser beams or sight rails.

The Contractor shall check the invert level of the laid pipe at each manhole position prior to the construction of the manhole. The onus is on the Contractor to arrange and verify the check levelling but any deviation from the specified tolerance remains the responsibility of the Contractor.

PSA 7.6 As-built Information

As the works are progressing, the Contractor shall mark on a separate set of drawings, after checking the information, all "As-Built" details and submit them to the Employer's Agent's Representative for approval on a weekly basis.

Where services have been disturbed, all services shall be surveyed, ends of all ducts or banks of ducts, all pipe bends and the cover and invert levels of all manholes and catchpits shall be surveyed prior to being backfilled.

The Contractor shall supply this co-ordinate and level information in electronic format, with the marked-up drawings at the completion of the contract. This information will be required in both hard copy and in electronic format. The format of as-built electronic information shall be obtained from the Council Representative. No separate payment for this work shall be made in the Schedule of Rates. It shall be deemed to be included in the Contractor's General Obligations.

Refer to the annexure in C3.6 Annexes, "**Protocols Regarding Civil As-built Plans and GIS Data**", for the format of submission of all as-built information.

The Certificate of Completion shall only be issued once the required information has been submitted and approved.

PSA 8 MEASUREMENT AND PAYMENT

PSA 8.2.2 PAYMENT – Time-related Items

Delete the second sentence and replace with the following:

Subject to the provisions of 8.2.3 and 8.2.4, the tendered sum per day shall be multiplied by the number of days required to complete the site activities from the commencement date of the contract until the end of the period for completion of the works.

PSA 8.3 SCHEDULED FIXED-CHARGE AND VALUE-RELATED ITEMS

PSA 8.3.1 Contractual Requirements

Add the following items:

PSA 8.3.1.1 Security (Provision of Performance Guarantee) Unit: Sum

The unit of measurement shall be for the entire contract period and payment thereof will be made after commencement of the contract.

The tendered rate shall include for all costs involved to comply with the requirements as stipulated.

PSA 8.3.1.2 Insurance (Blanket Policy) Unit: Sum

The unit of measurement shall be one year and payment thereof will be made at the beginning of each year of the contract respectively.

The tendered rate shall include for all costs involved to comply with the requirements as stipulated.

PSA 8.4 SCHEDULED TIME-RELATED ITEMS

Wherever the words "The sum "*occurs in Sub clause 8.4 replace with the words* "The sum per day ".

Wherever the Unit "Sum" *occurs in Sub clause 8.4 replace with the Unit* "day ".

PSA 8.4.2.2 Facilities for the Contractor

The sums tendered for in Items 8.3.2.2 and 8.4.2.2 for the Contractor's fixed and time related charges shall include for all the requirements described.

Contractor's Fixed Charges: The camp site will only be established if warranted. It is envisaged that the Contractor will not establish a camp site for every Works project.

Should the Contractor wish to use any areas outside the site as defined above, he shall negotiate for the use of and rent for, such additional areas, with the affected landowners. Any damage to or desecration of land outside the site shall be made good to the satisfaction of the landowner and the Employer's Agents Representative at the Contractor's expense

PSA 8.7 Daywork

(a) Labour charges

(i) (description of employee/designation/skill indicated) Unit: hour (h)
(ii) (etc, for other designations/skills) Unit: hour (h)

The unit of measurement shall be the hour of time worked by the particular employee on the designated work on instruction by the Employer's Agent.

The daywork rates submitted for labour in the schedule of quantities shall be the cost of labour for each skill level and shall apply only to the number of workers approved in writing by the Employer's Agent.

The rates shall be for normal working hours and shall be increased pro rata for overtime at the standard rate applicable if the work performed outside working hours is approved in writing by the Employer's Agent.

The tendered rates shall include full compensation for all costs for salaries and wages, use and maintenance of tools and equipment, holidays with pay and financial charges of any description incurred by the Contractor and his subcontractors as well as for all insurance, accommodation, travelling, travelling time, supervision, overheads, profit, obligations, risks and any other emoluments and incidentals necessary for labour to execute work as daywork.

(b) Material charges

(i) Actual cost of material (excluding VAT) Unit: Provisional Sum
(ii) Handling cost in respect of subitem (b)(i) Percentage (%)

Expenditure under this item shall be made in accordance with Clause 6.5 of the General Conditions of Contract. The provisional sum allowed shall include for the actual cost incurred for materials used in authorised daywork. The actual costs for materials shall not be subject to contract price adjustment.

The tendered percentage is a percentage of the amount actually spent under subitem (b)(i) and shall include full compensation for the handling costs of the Contractor, profit, overheads and incidentals in connection with materials used for daywork on the instructions of the Employer's Agent.

Payment for expenditure under this item will be made in full as and when the money is expended subject to written proof by the Contractor of payment of invoiced amounts.

(c) Plant charges

(i) (description of plant indicated) Unit: hour (h)
(ii) (etc for other plant) Unit: hour (h)

The unit of measurement shall be the hour actually worked by each item of plant (vehicle, machine or equipment) on the designated work on instruction by the Employer's Agent.

The Contractor and the Employer's Agent will agree on the method of recording the working hours prior to the commencement of work. Any long period of idling at any one time which in the opinion of the Employer's Agent is beyond that required for normal operating conditions will not be paid for as working time. Non-working hours for any reason shall not be measured for payment.

The tendered rates include full compensation for furnishing and using the plant, including the cost of plant operators, consumable stores, fuel, ground-engaging tools, maintenance and for all other incidentals necessary to execute the authorised daywork as specified.

Where there is ambiguity between the power developed at the flywheel and mass of machine, the power shall govern the measurement category.

(d) Other plant not specified above Unit: Provisional Sum

The provisional sum provided to cover the cost of other plant shall be expended in accordance with Clause 6.5 of the General Conditions of Contact.

PSA 8.8 TEMPORARY WORKS

PSA 8.8.1 Main Access Road to Works ..... Unit: m

ADD THE FOLLOWING TO THE SUBCLAUSE:

The Contractor will have to satisfied himself with regard to the accessibility of the site and the standard of access available via the existing main roads, minor roads and tracks. The tendered sums shall cover the cost of the upgrading or constructing where necessary, and maintenance of existing access, including new access roads as required by the Contractor.

The cost of maintenance, watering as specified in PSA 5.8(a)(iii) and temporary repair of all existing access roads, new access roads required by the Contractor and tracks shall be included in the sum. The tendered sum shall cover the cost of all maintenance required to the standard specified throughout the construction period and the reinstatement/scarifying of the roads as specified in PSA 5.8(b).

PSA 8.8.2 Dealing with traffic

Add the following:

Work relating to dealing with traffic (or accommodation of traffic) is to be carried out in accordance with Accommodation of Traffic included in the Particular and Generic Specifications section. No separate measurement and payments for dealing with traffic is done in the Accommodation of Traffic Section. Payment will be included under Item E.15.01 (PSA 5.2.4).

(a) Point repair (Up to 15 meter) Unit: No

(b) Point repair (Over 15m and up to 30 meter) Unit: No

The tendered sum for the above point repairs shall cover the all the costs of dealing with traffic for the point repair for up to the entire length as required and the maintenance until completion of the works.

Replace item 8.8.4 with the following:

PSA 8.8.4 Existing services

PSA 8.8.4.1 Location and protection of existing services:

[redacted]

Where particular items are provided in other sections of the bills the costs of detection, exposure, protection and alterations shall be covered by such particular items. Where no such particular items are provided and where there is reason to expect the presence of such a service or services, the following items will apply:

(a) Supply or hire of specialist equipment for detection of existing services Unit: Sum

(b) The use or hire of specialist equipment for detection Unit: Hour

The items shall cover the cost of providing and operating suitable equipment necessary in order to locate all existing services likely to be affected by the construction activities. Alternatively an approved specialist firm may be employed to carry out the work.

PSA 8.8.4.2 Hand excavation necessary for locating and exposing existing services in all materials:

(a) In roadways .....Unit: m³
(b) In all other areas .....Unit: m³

The rates shall cover the cost of excavating by means of hand tools within authorised dimensions, for all precautionary measures necessary to protect the services from damage during excavation and backfilling and for subsequent backfilling and compacting. Compaction of material in all areas except in roadways shall be to 93% of modified AASHTO density.

The rate for hand excavation in roadways shall also include compensation for compacting excavated or selected backfill material to 100% of modified AASHTO density. Reinstating layerworks and surfacing shall be measured and paid for under SANS 1200 DB.

The tendered rates shall also include for keeping excavations safe, for dealing with surface and subsurface water and for removal of surplus excavated material from the site."

Add the following items:

PSA 8.8.7 Dealing with water

(a) Establishment.....Unit: Sum
(b) Dealing with subsurface water.....Unit: day
(c) Dealing with surface water .....Unit: day

Dealing with subsurface water by means of a well point system:

(a) Establishment.....Unit: Sum
(b) Installation of well points and manifold.....Unit: No
(c) Operate and maintain (150 points max).....Unit: day
(d) Operate and maintain (300 points max).....Unit: day
(e) Provisional Sum for other Specialist dewatering not covered above.....Unit:Prov Sum
(f) % Profit and Attendance for item above.....Unit:%

The sum shall cover the cost for the provision, operation, maintaining and removal of all plant and materials required to deal with any water anywhere on the Site as required in terms of Sub clause 5.1.3 of SANS 1200 D and Sub clause 5.1.2 of SANS 1200 DB. No additional payment will be made for "Special water hazards".

The sum shall cover the cost of providing the necessary plant or materials, or both, fully erected and operative on the Site, the cost of supplying, operating and maintaining pumps, well points, sheeting, close timbering, and other equipment, as applicable, for 24 hours a day, 7 days a week, throughout the period during which the facilities are required, and the cost of removing such goods and restoring the Site to its original condition on completion of that part of the project for which the temporary works were erected.

PSA 8.8.8 Watching, lighting and temporary fencing

PSA 8.8.8.1 Provision of PSiRA Security Guards: Unit: Man-day

(a) PSiRA Grade A Guard
(b) PSiRA Grade B Armed Guard
(c) PSiRA Grade B Unarmed Guard

[redacted]

(d) PSiRA Grade C Armed Guard
(e) PSiRA Grade C Unarmed Guard
(f) PSiRA Grade D Unarmed Guard

(g) Extra-over item (a-f) above for security guards working overtime, night work, or on a weekend or public holiday when instructed.

This item shall include for provision of security services on weekdays and weekends and public holidays and any other security measures which the Contractor may wish to employ during the contract as specified in C3.1 sub clause 7.4.

The Service Provider shall take every precaution to ensure the safety of all staff and to protect the infrastructure being rehabilitated from theft and vandalism. The Service Provider shall be responsible for the safety and security of his personnel, plant/equipment on site and the working area in general and at all times, from establishment to de-establishment. The Service Provider shall therefore acquaint himself with the current situation in the area with regard to safety and security (liaising with the local police as necessary) and shall provide all security measures, including the employment of accredited security services, as deemed necessary to comply with the requirements under this clause of the Contract.

All security staff employed on site must be registered with the Private Security Industry Regulatory Authority (PSiRA). Proof of such registration must be made available to the employer's agent upon request. The security arrangements must be discussed with, and approved by the Employers Agent representative prior to commencement of the work.

Unarmed is defined as any non-lethal equipment such as a baton, stun gun, taser or pepper spray. Armed shall include a firearm along with the relevant South African Police Service firearm competency. Armed guards will only be utilised under extraordinary circumstances and will require the written approval of the Employers Agent. The unit of measurement shall be a 12 hour shift or portion thereof worked by a security guard.

The City of Cape Town have many areas known for high levels of crime. Security guards shall be provided at the site camp as a minimum security measure as instructed or agreed. The Contractor shall allow for his own additional security to improve safety in and around the site and its offices. Notwithstanding any other clauses in this document the Contractor should allow for Insurances, Fencing, Lockable Gates, and any other security measures deemed necessary by the contractor to keep all site personnel and equipment safe.

The unit of measure for item (a - f) shall be the number of man-days that the security guard(s) have worked and shall be measured from the time the person(s) arrives at their post until the time they leave with a maximum 12 hour shift. This item shall only be paid for additional security guards requested or instructed by Employers Agent or as agreed in advance between the Employers Agent and Contractor. Security not agreed on in advance shall not be payable.

The tendered rate shall be based on the PSIRA published rates for the applicable grade and cover the cost of wages, transport to and from site, all personal protective equipment, any other costs, profit and mark up. The tendered rate for (g) shall be based on the PSIRA published rates for overtime/night work, public holidays or weekends for un-armed security guards and shall only cover the additional costs associated with working overtime, working at night or working on a weekend or public holiday. The basic rate shall be covered in item (a-f). This item will only be paid when there has been a specific request for work to be carried out during overtime, at night, or on a weekend or public holiday, or if it has been agreed upon in advance between the Employers Agent and Contractor. If the contractor provider chooses to work during these times for whatever reason without an instruction or a prior agreement, this item will not be paid.

Temporary fencing of excavations: Unit: m

This shall include for supplying all delineators, poles and warning tape and fencing where required, providing all labour necessary for the operation, supervising the work, interim removal and re-erection and any other incidentals necessary to satisfactorily complete construction.

Lighting: Unit: Day

This shall include for supplying all the lighting units, chains, padlocks and poles, providing all labour necessary for the operation, all maintenance of the lighting system, supplying all cables and electrical power as required, supervising the work, the interim removal and re-erection of the lighting units, and any other incidentals necessary from the satisfactory operation of the lighting.

PSA 8.8.9 **Liaison with Service Authorities**..... Unit: Su

[redacted]

The tendered sum shall include full compensation for liaising and interacting with all the relevant Service Authorities for this contract document, for obtaining the necessary wayleaves for services affected by the Works, allowing them onto the site and accommodating them for any service protection, relocation or supervision which may be required.

The Contractor shall at all times abide by any conditions imposed by such way leaves permissions or permits. The Contractor shall ensure that all wayleaves, permissions and permits are kept on site and are available for inspection by the relevant service authorities on demand. The Contractor shall also ensure that any wayleaves in respect of electricity services are renewed timeously every three months.

The City of Cape Town will provide the funds for the electrical guarantees when required for works to be executed in HIGH Voltage electrical servitudes of the City of Cape Town's electrical department.

However, the contractor is to ensure to not damage these cables. The cost of repairing any damage to services, due to miscalculations or negligence on the part of the Contractor or his failure to carry out the duties set out in this Clause, shall be borne by the Contractor. The contractor is to make good with the electrical department where monies for damages are owing within 7 days of receipt of such request for payment.

Should the contractor damage cables, and not pay the electrical department the outstanding monies within the required 7 days, the City reserves the right to claim such amounts from the contractors standing Performance guarantee during contractual stage.

Any works under construction by the contractor at the time of such negligence, will be put on hold until the full required value of the Performance Guarantee has been reinstated and proof of such in the form of an accepted original Performance Guarantee has been provided to the Contract's Manager.

The contractor cannot claim any standing time or extension of time on any projects in construction stage, resulting from the required performance guarantee not being in place as per the contract requirements.

Application for use of a Public open Space for site camp is covered by a Provisional Sum. Rental of the site is also covered by a Provisional Sum.

PSA 8.8.10 Survey

PSA 8.8.10.1 Setting out

The cost of setting out, including the cost of establishing temporary bench marks and pegs in terms of PSA 5.1.1, will be held to be covered by the rates tendered for the fixed charge and time related items in the Schedule of Rates.

PSA 8.8.10.2 Survey beacons and boundary pegs

Any costs in connection with the replacement of beacons or pegs for which the Contractor is responsible in terms of Sub clause 5.1.2 of SANS 1200 A will be recoverable from the Contractor by deduction from the monthly certificate of payment.

PSA 8.8.10.3 As-built survey

The costs for the relevant item shall be included in the Preliminary and General items and shall cover all costs associated with providing the Employer's Agent with the required as-built information of the Works in terms of PSA 5.1.3.

Add the following items:

PSA 8.9 HEALTH AND SAFETY

PSA 8.9.1 Complying with Health and Safety requirements Unit: day

The tendered sum shall include full compensation to the Contractor for compliance with all the requirements of the OHS Act and Regulations (including the Construction Regulations 2015 and OHS Specification, the Professional Indemnity (PI) insurance, other statutory requirements and provision of qualified OHS officer) at all times for the full duration of the Contract.

PSA 8.9.2 Asbestos Specialist Services:

[redacted]

(a) Approved Asbestos Inspection Authority (AIA) to assist the Contractor with the approval of the asbestos plan of work, in accordance with legislation Asbestos Regulations GNR. 1196 of 2020
Unit: Prov Sum

(b) Administrative cost and profit in respect of above item (a) Unit: %

(c) Handling and disposal of asbestos containing waste from site to the permitted Vissershok Landfill site, in accordance with legislation Unit: Sum

(d) Transport of asbestos-containing waste to the licensed privately owned operated hazardous waste disposal facilities (rated H:H) at Vissershok for waste with classification ratings of 1 (extreme risk), in accordance with Asbestos Regulation.
Unit: ton.km

(e) Cost of dumping at privately owned, permitted Vissershok landfill site (Original tipping slips are required for audit purposes) Unit: ton

Payment for this item shall include all the statutory requirements and recordkeeping as stated in Section 9 and 16 of the Asbestos Regulation GNR.1196 of 2020.

PSA 8.10 Complying with Environmental Management requirements Unit: day

The amount tendered for this item shall allow for full compensation for all costs, of whatever nature, for adhering to the Environmental Management Plan, including provision of the ECO Officer, as set out in C3.1 Description of works, sub-clause 3.1.5.13 and C3.5 Management, Particular Specification E of this document.

PSA 8.11 Noise Exemption Permit Unit: Sum

The tendered rate must include all costs incurred for obtaining a Noise Exemption Permit for each "Works Project" prior to construction. This permit is required for all works including CCTV.

[redacted]

PSC SITE CLEARANCE

PSC 1 SCOPE

The site is situated in a developed urban environment. The contract will require the demolition and removal or storage of existing materials on the site prior to commencement of the works.

PSC 3 MATERIALS

PSC 3 .1 Disposal of Material

No material shall be spoiled on the site. The Contractor shall make his own arrangements for the provision of a suitable spoil area off the site.

The Contractor will be held solely responsible for observing the by-laws and regulations of the relevant local authorities with regard to fire and for any injury to persons and damage to property. The Contractor shall indemnify the Employer against all claims for damages arising from this source.

The Contractor shall obtain his own dumping sites for the disposal of material and all transport costs shall be included in the rates tendered for site clearance.

PSC 5 CONSTRUCTION

PSC 5.1 Areas to be cleared and grubbed

Add the following items:

Only the approved minimum area required for the execution of the Works including areas on which material shall be stockpiled for later reuse or on which material shall be dumped and spread, shall be cleared and grubbed.

Pipeline routes shall be cleared to a distance of 1,5m on both sides of the pipeline centre line. Route pegs or markers shall not be destroyed or damaged during clearing operations.

Add the following items:

The following applies to clearing widths:

(a) The width to be cleared for the road shall not exceed 6,0m.

(b) The area to be cleared for parking zones shall not exceed the specified dimensions by a margin of 0,5m measured from the perimeter.

PSC 5.2 Cutting of trees

PSC 5.2.3 Preservation of trees

PSC 5.2.3.2 Individual trees

Replace the last sentence with the following:

An amount of **R10 000.00** will be deducted from moneys due to the Contractor as a penalty for every tree that is damaged or removed unnecessarily.

PSC 5.5 RECLEARING OF VEGETATION

Add the following items:

When areas have to be re-cleared on the written instructions of the Employer's Agent, such re-clearing shall be carried out at the Contractor's own cost and the Contractor is therefore advised not to clear the areas too soon.

PSC 5.6 CONSERVATION OF TOPSOIL

Add the following:

Topsoil up to a depth of 150 mm, where shown on drawings or as directed by Employer's Age[redacted] site, shall be removed from the above specified cleared areas and stockpiled on approved sit[redacted] later reuse.

Until required for spreading, the stockpiles of topsoil material shall be stabilized by watering or other approved means.

Add the following new sub clause:

PSC 5.9 REMOVAL AND STORAGE OF KERBING, CHANNELLING, EDGING, PAVING AND GRASSING

Where indicated by the Employer's Agent, the Contractor shall remove existing kerbing, channelling, and edging, paving and grass sods and store all materials such kerbing, channelling and edging for re-use and reinstatement on the site of the works.

Where existing kerbs are to be removed and the existing channels are to remain, the Contractor shall carefully remove the kerbs without disturbing the channels. Any channels which are disturbed or damaged during this operation shall be replaced at the Contractor's expense.

The unit of measurement will be the meter of material removed and stacked for re-use.

PSC 8 MEASUREMENT AND PAYMENT

PSC 8.1 BASIC PRINCIPLES

Add the following:

The thickness of the layer that will unavoidably be stripped during clearing of vegetation will be taken as 150 mm. This implies that levels used in earthworks quantity calculations will be 150 mm lower than the original levels.

PSC 8.2 PAYMENT

PSC 8.2.1 Clear and grub

Replace the first line with the following:

The area designated by the Employer's Agent to be cleared and grubbed will be measured in square meter to the nearest square meter or,

PSC 8.2.7 Dismantle and remove pipelines, electricity transmission lines, cables, etc.

Also applies to underground structure

Replace the second paragraph with the following:

The tendered rates shall include full compensation for the detection, disconnection, removal, disposal at a dumping site and any charges for the use of the dumping site, including all necessary excavation and backfilling.

In the event of the Contractor damaging any of the services he will replace it at his own cost.

a) Pipelines

Pipelines (all materials)	
i) Up to 250mm diameter	Unit: m
ii) Over 250mm diameter up to 500mm diameter	Unit: m
iii) Over 500mm diameter	Unit: m
Pipelines encased in concrete (all materials)	
iv) Up to 250mm diameter	Unit: m
v) Over 250mm diameter up to 500mm diameter	Unit: m
vi) Over 500mm diameter	Unit: m

The rate shall cover the cost of the dismantling, break up if encased in concrete, removal and disposal of existing pipe of nominal sizes to a site provided by Contractor.

b) Manholes (Fibre cement or Concrete) Unit : No

The rate shall cover the cost of the demolishing, removal and disposal of existing fibre cement or concrete manholes to a site provided by Contractor.

c) Manholes (Brick) Unit : No

The rate shall cover the cost of the demolishing, removal and disposal of existing brick manholes to a site provided by Contractor.

d) Kerbs, edging and channels — Unit : m

The rate shall cover the cost of the removal and disposal of existing kerbs, including all necessary excavation to site provided by Contractor.

e) Asphalt

i) 0mm to 50mm thick	Unit: m^2
ii) Over 50mm thick	Unit: m^2

The rate shall cover the cost of the removal and disposal of existing asphalt sidewalks to a site provided by Contractor.

f) Road signs — Unit: No

The rate shall cover the cost of the removal and disposal of existing road signs to a site provided by Contractor.

g) Vertical poles / bollards — Unit: No

The rate shall cover the cost of the removal and disposal of existing vertical poles or bollards to a site provided by Contractor.

h) Fence

i) All wire type fencing	Unit: m
ii) All palisade type fencing	Unit: m
(g) Vibracrete walls	Unit: m

The rate shall cover the cost of the removal and disposal of existing fences to a site provided by Contractor.

i) Trees and Plants / Shrubs — Unit : No

The rate shall cover the cost of the removal and disposal of existing small trees and plants/ shrubs to a site provided by Contractor.

j) Grass and lawns — Unit : m^2

The rate shall cover the cost of the removal and disposal of existing grass and lawns to a site provided by Contractor.

k) Concrete in roads, driveways or walkways

i) Up to 100mm thick concrete	Unit: m^2
ii) Over 100mm and up to 200mm thick concrete	Unit: m^2
iii) Over 200mm thick concrete	Unit: m^2

The rate shall cover the cost of the cut, removal and disposal of existing concrete roads, driveways or walkways to a site provided by Contractor.

l) Brick Paving in roads, driveways or walkways — Unit: m^2

The rate shall cover the cost of the removal and disposal of existing brick paved roads driveways or walkways to a site provided by Contractor.

PSC 8.2.10 Remove topsoil to a nominal depth of 150mm, stockpile and reinstate..... Unit: m^3

The tendered rate shall include full compensation for removing topsoil to a depth of 150 mm, temporary storing of material, transporting and reinstating.

Add the following item in sub clause 8.2:

PSC 8.2.11 Remove and dispose of rubble Unit: m^3 [redacted]

The rate shall cover the costs of dismantling and demolishing the items not covered in PSC 8.2.7 as required and the costs of loading, transporting and dumping of the material at a registered dump site and any charges for the use of the dumping site to be identified by the Contractor.

PSC 8.2.12 Remove and stockpile material for later reinstatement

a) Kerbs, edging and channels — Unit: m

The tendered rates shall include full compensation for the careful removal of kerbs, edging or channels, the temporary stockpiling and cleaning thereof and the reinstatement once the work has been completed, including all necessary excavation, backfilling and concrete bedding and backing with 20 MPa concrete. In the event of the contractor damaging any of the kerbs, he will replace it at his own cost.

b) Road signs — Unit: No

The tendered rates shall include full compensation for the careful removal, the temporary stockpiling and cleaning thereof and the reinstatement once the work has been completed, including all necessary excavation, backfilling and concrete bedding and backing with 25 MPa concrete. In the event of the contractor damaging any of the signage, he will replace it at his own cost.

c) Trees and Plants / Shrubs — Unit: No

The tendered rate shall cover the cost of careful removal, lifting, removing, transporting, stacking and maintaining for 10 days.

d) Vertical poles / bollards — Unit: No

The tendered rates shall include full compensation for the careful removal, the temporary stockpiling and cleaning thereof and the reinstatement once the work has been completed, including all necessary excavation, backfilling and concrete bedding and backing with 20 MPa concrete. In the event of the contractor damaging any of the poles/bollards, he will replace it at his own cost.

e) Grass and lawns — Unit: m²

The tendered rate shall cover the cost of cutting, lifting, removing, transporting, stacking and maintaining the lawn sods for 10 days.

f) Brick Paving in roads, driveways or walkways — Unit: m²

The tendered rate shall include full compensation for the careful removal and stockpiling of the existing paving and sub-base and the compaction of the sub-base to 95% MOD AASHTO density, the placement of a 25mm thick clean sand layer from commercial sources and the careful reinstallation of the brick paving to suit the existing adjacent levels and to ensure adequate surface drainage of stormwater.

g) Fence

i) All wire type fencing — Unit: m
ii) All palisade type fencing — Unit: m
iii) Vibracrete walls — Unit: m

The rate shall cover the cost of taking down the vibracrete walls and fences (palisade and wire type), coiling wire, sorting and stacking all material at sites indicated by the Employer's Agent. The rate shall cover the cost of loading, transporting, offloading all material and reinstallation of vibracrete walls and fences to previous position and condition. Any materials damaged by the Contractor must be replaced by the Contractor.

PSC 8.2.13 Remove existing and install new:

a) Road signs — Unit: No

The tendered rates shall include full compensation for the removal, disposal thereof and the supply and installation of new road signs, including all necessary excavation, backfilling and concrete bedding and backing with 25 MPa concrete.

b) Trees and Plants / Shrubs — Unit: No

[redacted]

The tendered rate shall cover the cost of removal, disposal thereof and the supply, installation and maintenance of new trees, plants or shrubs.

c) Vertical Poles / bollards Unit: No

The tendered rates shall include for the careful removal, the disposal thereof supply and installation of new poles or bollards, including all necessary excavation, backfilling and concrete bedding and backing with 20 MPa concrete.

d) Fence

i) All wire type fencing Unit: m
ii) All palisade type fencing Unit: m
iii) Vibracrete walls Unit: m

The tendered rate shall cover the cost of taking down the fences, deposing thereof, the supply and installation of fencing and the cost of temporary bracing the sections of fence not taken down. The rate shall also cover the cost of all excavation necessary and the disposal of all rubble.

PSC 8.2.14 Saw Cutting of existing surfaces Unit: m

The rate shall cover the cost for saw cutting of premix including all markings and setting out to ensure that all saw cutting is done in a straight line for open trench road crossings. This will only apply when existing asphalt, concrete, paving and other hard surfaces were cut for removal and the edge of surface not to be excavated was damaged and needs to be replaced. The tendered rate shall include full compensation for neatly saw cutting the existing asphalt, concrete, paving and other hard surfaces. Where existing asphalt is saw cut, the rate shall include for the application of an approved tack coat on the joint face of the existing asphalt.

PSC 8.2.15 Overhaul

No payment shall be made for overhaul. All haulage shall be considered freehaul.

PSC 8.2.16 Removal of Bees Unit: Prov Sum

The tendered rate shall include full compensation for the safe and careful removal of bees, including the Call out and / or assessment fee, travel costs, removal of a Colony hanging in easily accessible position or in a difficult or dangerous position.

[redacted]

PSDB EARTHWORKS (PIPE TRENCHES)

PSDB 3 MATERIALS

PSDB 3.1 Classes of Excavation

Notwithstanding the provisions of Sub-clause 3.1 of SANS 1200 DB, the materials excavated other than hard rock will not be classified for the purposes of measurement and payment. The rate for excavation shall cover excavation in all materials other than hard rock (as specified in SANS 1200 DA sub-clause 3.1.2. (c))

PSDB 3.5 BACKFILL MATERIAL

a) *Substitute "from trenches" in DB 3.5(a) with "from trenches, channels or street excavations".*

Add the following to DB 3.5.

b) All pipe trenches underneath the roadway must be backfilled with sand of upper selected layer quality compacted to 100% of the modified AASHTO maximum density. Sand is defined as non-plastic material and complies with the following sieve analysis:

% passing 4.740 mm sieve	95% minimum
0.425 mm sieve	50% minimum
0.075 mm sieve	10% maximum

Add the following to DB 3.5(b):

c) All pipe trenches in street reserves shall be classified as areas subject to loads from road traffic.

d) All pipe trenches underlying or adjacent to the carriageway shall be backfilled with sand complying with the requirements, as specified in DB 2.3.

PSDB 3.6 MATERIALS FOR REINSTATEMENT OF ROADS AND PAVED AREAS

PSDB 3.6.1 Subbase and Base

Base: Existing road layers shall be reinstated with type G4 base (with crushed stone compacted to 98% Modified AASHTO density) 150 mm thick after compaction

The base layer shall be benched so that the layer overlaps the underlying subbase layer by at least 150 mm on either side of the trench excavation.

Subbase: Existing road layers shall be reinstated with type G5 subbase (with crushed stone compacted to 95% Modified AASHTO density) 150 mm thick after compaction.

The subbase layer shall be benched so that the layer overlaps the underlying selected layer/ insitu by at least 150 mm on either side of the trench excavation.

PSDB 3.6.2 Gravel

Gravel material shall be a natural gravel subbase especially for reinstatement of shoulders compacted to 95% Modified AASHTO density with CBR>45 and a maximum Plasticity Index (PI) of 6.

PSDB 3.6.4 Asphalt Surfacing

The surfacing shall consist of a medium continuously graded asphalt surfacing – CCC Medium or COLTO Medium. The edges of the surfacing / seal shall overlap the base by at least 150 mm on both sides of the trench excavation. The joints and both sides of the trench to the existing asphalt edges must be sealed with Colseal. A tack coat shall be applied to the finished surface of the base course layer.

PSDB 3.8 GEOTEXTILE BLANKET

In addition to the requirements of Sub clause 3.1.3 of SANS 1200 DK the geotextile shall comply with the following, unless otherwise specified:

Minimum mass:	150 g/m2 (minimum)
Strength in all directions:	6 kN/m (minimum)

The Employer's Agent's approval of the make and grade of the geotextile shall be obtained by the Contractor before the Contractor orders any geotextile or uses it on the Works.

"Bidim" or "Kaymat" or equivalent geotextile will be acceptable.

PSDB 4 PLANT

PSDB 4.2 Control of Water

It can be expected that the existing pipelines may lie below the water table. These conditions will necessitate that the Contractor will have to adopt appropriate techniques or provide plant as set out in sub clause 4.2 to control the water. The Contractor's attention is drawn to sub clause 5.1.2 of SANS 1200DB and PSDB 5.1.2 in connection with the control of water.

The Contractor shall protect all excavations against any water ingress whether by seepage, rains, storms, floods or any other means.

The Contractor must provide all the necessary equipment (pumps, piping, etc.) to remove any water found in the excavation by pumping and/or bailing. Water is cleared in such a way that it cannot seep or flow back into the excavations.

Any water present in the excavation must be pumped and/or bailed out before backfilling. Water must be pumped into the Stormwater and not into a sewer manhole.

PSDB 5 CONSTRUCTION

PSDB 5.1 PRECAUTIONS

PSDB 5.1.1 General

Trench excavation for new pipelines will be generally by machine after existing services have been exposed by hand.

Trench excavation for pipe repairs will be generally by hand after existing services have been exposed.

The trench excavation shall be such that the base width includes sufficient working space.

The existing pipeline may be corroded or damaged and excavation in close proximity to it will have to be performed with care to avoiding collapsing the pipe. The excavation around the existing pipe from 0.5m above its crown shall be by hand.

PSDB 5.1.2 Stormwater, Seepage and Dewatering of Excavations

In addition to the Contractor's responsibilities for dealing with water, the Employer's Agent may order the Contractor to place a crushed stone bedding layer (minimum thickness 150mm) on the trench bottom.

Prior to the provision of the stone layer, Grade A2 or similar geofabric filter material of minimum mass of 150g/m2, as specified in PSDB 3.8, must be installed on the trench bottom. After the placement of the stone bedding, the geofabric filter material shall be folded over the stone with a minimum overlap of 300mm to form an enclosed drain. The specified bedding material shall then be used to bed the pipe.

The Contractor will only be paid for providing and laying the stone bedding layer and the geofabric filter material after receipt of a written order to do so from the Employer's Agent.

PSDB 5.1.3 Accommodation of traffic and access to properties

Replace the word "and" at the end of sub clause 5.1.3 (a) with a full stop and replace item (b) with the following:

(b) Where necessary to achieve compliance by the Contractor with his obligations in terms of the Scope of Works to provide and maintain pedestrian and vehicular access to properties affected by the works, the Contractor shall construct and maintain to the satisfaction of the Employer's Agent, such temporary access roads around, and/or steel or timber bridges over excavations in roads, pavements, entrances or accesses to properties.

[redacted]

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

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

Add the following new sub clauses to sub clause 5.1:

PSDB 5.1.5 Stability of trench excavations

The precautions for excavations as specified in Clause 5.1.1 of SANS 1200 D, and the relevant amendments to the Standard Specification's clauses, shall also apply to all trench excavations.

The Contractor 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 1,5m 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."

PSDB 5.1.6 Protection of Existing Services

The Contractor shall exercise all the necessary care to prevent damage to known services during construction operations. Major excavating equipment and other plant shall not be operated in dangerously close proximity to these services. Where necessary, excavation in close proximity to these services shall be carefully carried out by means of suitable hand tools, excluding picks wherever their use could cause damage to the services. No additional payment will apply to such more difficult work.

Services left exposed shall be suitably protected from damage and/or theft.

PSDB 5.1.7 Liability for Damage and Insurance

The Contractor's attention is drawn to the relevant clauses of the General Conditions of Contract and Contract Specific Data regarding liability for damage to the Works, or property, or injury to persons arising from the construction of the Works. His attention is also drawn to the General Conditions of Contract regarding insurance to be effected by the Contractor. Special attention is drawn to the exclusions in this insurance policy and particularly to the exclusions regarding consequential damage.

PSDB 5.1.8 Alterations and Repairs to Existing Services

Unless the contrary is clearly specified or ordered, the Contractor shall not carry out any alterations to existing services. Where this may be necessary, the Contractor shall inform the Employer's Agent, who will either make arrangements for such work to be executed by the owner of the service, or instruct the Contractor to make such arrangements himself.

Where existing services are damaged by the Contractor, he shall immediately inform the Employer's Agent, or when this is not possible, the relevant authority, and shall obtain instructions as to who should carry out repairs. In urgent cases, the Contractor shall take all necessary steps to minimize damage to and the interruption of the service. No repairs shall be attempted to telecommunication cables, or electric power lines and cables.

No liability for damages arising from any delay in having such alterations or repairs effected will be accepted by the Employer. The Contractor shall provide all reasonable opportunity, access and assistance to persons doing alterations or repairs to existing services.

PSDB 5.1.9 Access to Services

The Contractor shall allow all reasonable access to any Authority for the purpose of maintaining, laying and/or relaying any service, cables or mains during the period of this Contract.

The Contractor shall co-operate with other Contractors or Authorities responsible for the installation of water reticulation, electricity cables and telephone cables and shall arrange his programme accordingly.

PSDB 5.3 Site Clearance

Delete the first sentence and replace with the following:

The Contractor shall clear an area along the pipe route as designated by the Employer's Agent.

[redacted]

PSDB 5.4 Excavation

Add the following:

All excavated material shall be placed in such a way and in such positions as not to endanger or interfere with the works, pedestrians, traffic or property and the Employer's Agent may order the Contractor to remove any material that is considered liable to endanger or interfere with the works, pedestrians, property or traffic and to place such material in another position as indicated by the Employer's Agent.

The toe of the stockpile shall be trimmed well back from the edge of the trench so as to leave a minimum 1,0 m clearance between the edge of the stockpile and the edge of the trench. The Contractor shall keep this strip clear of excavated material at all times and take all necessary steps to prevent mixing with material set aside for backfill.

The Employer's Agent may, in terms of Subclauses 5.6.3 and 5.6.4, order the Contractor to remove any material which he considers liable to endanger or interfere with the Works, private property, traffic, or pedestrians, and to place such material at some other approved position. If the necessity for such removal is, in the opinion of the Employer's Agent, a result of some default on the part of the Contractor, the cost thereof shall be borne by the Contractor, otherwise the cost will be borne by the Employer at a sum pre-agreed with the Employer's Agent or measured as Daywork, whichever is the more appropriate in the opinion of the Employer's Agent.

PSDB 5.4.1 Shoring of Pipe Trenches

The Contractor shall take full responsibility for the safety of excavation, and shall carry out all measures necessary to make secure, by timbering and strutting or sheet piling, the excavated face. All timbering and strutting must be of sufficient strength and capable of being removed readily as the work proceeds.

The Contractor shall further take all precautions to safeguard existing services and structures next or next to excavations carried out by him and shall provide and erect any shoring or underpinning that may be necessary.

The timbering, strutting and sheet piling of the pipe trenches shall not relieve the Contractor of any responsibility and all claims for the compensation for damages or injury caused or aggregated by the Contractor not taking all precautions to safeguard persons or property, shall be met entirely by the Contractor.

PSDB 5.5 Trench Bottom

Where waterlogged trench bottom conditions exist after the Contractor has, in the Employer's Agent's opinion, carried out all possible dewatering operations, the Employer's Agent may order that unsuitable material be excavated and replaced with crushed stone. A layer of 19 mm crushed stone shall be placed over the full width of the trench bottom, in increments of 200 mm thick or such other thickness as may be ordered by the Employer's Agent. The crushed stone shall be placed and rammed into the trench bottom to create a firm platform and shall be finished off to the required trench formation level.

As an alternative, the Employer's Agent may order that a suitable selected fill material, obtained from the site, be placed in the trench bottom to the same dimensions as specified for the crushed stone. The selected fill material shall be compacted to the specified density for trench bottoms.

Where the Contractor's method of working results in quagmire conditions in the trench bottom, the Contractor shall excavate and stabilize the trench at his own cost.

PSDB 5.6 BACKFILLING

PSDB 5.6.3 Disposal of Soft Excavation Material

Surplus excavated material shall be taken off the Site and disposed of at a site arranged by the Contractor, and approved by the Employer's Agent. No payment for overhaul will be made.

PSDB 5.6.4 Disposal of Intermediate and Hard Rock Material

Surplus excavated material shall be taken off the Site and disposed of at a site arranged by the Contractor, and approved by the Employer's Agent. No payment for overhaul will be made.

PSDB 5.7 COMPACTION

[redacted]

PSDB 5.7.1 Areas Not Subject to Traffic Loads

Add the following sentence:

All non-cohesive material shall be compacted to 100% MOD AASHTO maximum density.

PSDB 5.7.2 Areas Subject to Traffic Loads

Delete "98%" and substitute with "100%".

Add the following:

All trenches backfilled under this contract shall be backfilled with a suitable material (G7 or better) or sand, where instructed by the Employer's Agent, placed in layers a maximum of 200 mm thick and compacted to 95% Modified AASHTO (100% for sand) maximum density. All pipe trenches that fall within the road reserves shall be regarded as areas subject to traffic loads.

PSDB 5.9 REINSTATEMENT OF SURFACES

PSDB 5.9.4 Bitumen Roads: Subbase and Base

Add the following sentence:

Any additional imported material required for the reinstatement of selected layers, subbase or base shall comply with the requirements of the relevant standardised and/or specification data for this contract.

PSDB 5.9.5 Bitumen Roads: Surfacing

Add the following sentence:

Trench excavations crossing existing roads must be completed, reinstated and reopened to traffic outside of peak-hours.

Add the following new sub clause in clause 5:

PSDB 5.11 RESTRICTED LENGTH OF TRENCH EXCAVATION

The Contractor shall ensure that under all circumstances the maximum open trench length is less than 100 m, but that open trench lengths are sufficient to lay the pipeline at the gradients shown on the drawings. i.e. localised high and low points shall not be permitted if not shown on the drawings.

For the sections with high water tables, the Contractor shall dewater the ground, excavate and support the trench and lay, bed and backfill the pipe up to the original ground level, including removal of the trench support and stopping dewatering. A detailed method statement covering the complete operation shall be submitted to the Employer's Agent for approval.

PSDB 5.12 CLEANING UP AS WORK PROCEEDS

The Contractor shall complete all backfilling, trimming, levelling and cleaning up of the Site as work proceeds.

PSDB 5.13 REINSTATEMENT OF EXISTING STORMWATER DRAINAGE INFRASTRUCTURE

The existing furrows and subsurface drainage shall be reconstructed to the same dimensions and standards as the existing, unless otherwise ordered or approved by the Employer's Agent. The work shall be carried out as soon as the pipeline (or appurtenant works) has been laid, tested and backfilled.

PSDB 5.14 REINSTATEMENT OF CLEARED AND GRUBBED AREAS

Once backfilling of the pipe trench and any disposal of surplus material over the cleared area (see PSDB 5.6.3 and PSDB 5.6.4) has been completed, the Contractor shall spread and lightly compact the topsoil layer where removed (see PSC 5.5 and PSC 5.6)."

PSDB 5.15 TRENCH WALL STABILITY

Notwithstanding the requirements of PSDB 5.11, the Contractor shall take responsibility for the length of trench open at any time and if collapse of the side walls occurs for any reason, the responsibility will be the Contractor's and he will reinstate and make good at his own cost."

[redacted]

PSDB 7 TESTING

Add the following to the clause:

The Contractor shall carry out density tests as specified in TMH1, in the positions indicated by the Employer's Agent, to determine the compaction of the backfill material in the trenches and the material used for reinstating the road construction layers. No single test result which is below the specified density, will be accepted.

In the case of trenches in areas subject to traffic loads, the Contractor shall, notwithstanding the terms of the second sentence of Subclause 7.1, bear the cost of all density tests carried out except as follows. Where the test results are equal to or exceed the specified density, the Employer will bear the cost of that number of those tests ordered by the Employer's Agent in excess of one test per 20 m3 of compacted material, based on the total volume of backfill and reinstated road layers, including the replacement of any over-excavation, in areas subject to traffic loads.

In the case of trenches not in areas subject to traffic loads, the Contractor shall undertake one density test per 50 m^3 of compacted material, based on the total volume of bedding and backfill, including the replacement of any over-excavation. The Contractor shall bear the cost of these density tests, unless additional density tests are ordered by the Employer's Agent.

The Contractor shall also bear the cost of those density tests, carried out by the Employer's Agent, of which the test results are below the specified density.

PSDB 8 MEASUREMENT AND PAYMENT

PSDB 8.3 SCHEDULED ITEMS

PSDB 8.3.2 Excavation

a) Excavate in all materials by machine for trenches, backfill, compaction of all layers and dispose of surplus material Unit: m

Payment for pipeline excavations by machine will be measured in linear meters to a depth of between 0.0 to 1.0 meters (one meter) thereafter in depth increments of 1.0 meters. If replacing an existing pipeline, the excavation around the existing pipe from 0.5m above its crown shall be by hand and shall be included in the rate.

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

i) Intermediate material Unit: m^3

ii) Hard rock or material Unit: m^3

iii) using pneumatic tools or other techniques where blasting is not permitted Unit: m^3
This payment item shall be for hard rock excavation by methods other than blasting.

c) Excavate and dispose of unsuitable material from trench bottom Unit: m^3

No payment for overhaul will be made.

d) Excavate in all materials by hand for trenches, backfill, compaction of all layers and dispose of surplus material Unit: m

Payment for pipeline excavations by hand will be measured in linear meters to a depth of between 0.0 to 1.0 meters (one meter) thereafter in depth increments of 1.0 meters.

e) Excavations for point repairs and manhole or sand/grit traps installation Unit: m^3

Payment will include excavation in all materials, backfill, compaction of all layers and dispose of surplus material. The depth shall be measured to the actual bottom of the trench. Payment for the excavations will be measured in cubic meters to a depth of between 0.0 to 1.0 meters (one meter) thereafter in depth increments of 1.0 meters.

Any deviation in this regard must be approved by the Employer's Agent.

PSDB 8.3.3 Excavation Ancillaries

PSDB 8.3.3.1 Make up Deficiency in Backfill Material

[redacted]

The rate for placing and compacting bedding and blanket material shall be included in the items for excavation and backfilling. No additional payment will be made for placing and compacting bedding and blanket using material from trench excavations.

Where material excavated from trenches is unsuitable for backfill, bedding or blanket material and cannot be reasonably selected from adjacent trench excavations, the Employer's Agent will order the use of material from commercial sources.

PSDB 8.3.4 Particular Items

a) Shoring trench for long length excavations — Unit: m

Shoring on both sides of the trench shall be measured per meter of excavation increment depth for each respective type of shoring billed. Should sheet piling be used it shall be cut off 1,0 m below ground level and the remainder left in-situ. The use of shoring however, does not in any way relieve the Contractor of his responsibilities in terms of the Machinery and Occupational Safety Act.

Where shoring is specified or ordered, it shall be installed on both sides of the trench and shall be measured per metre of excavation increment depth. Payment will be categorised in depth increments of 1,0 meters. The tendered sum shall include full compensation for shoring of the trench as specified.

Payment will be categorized into the following classes: (The rates are not accumulative)

i) Shoring for depths 1 – 2m	Unit: m
ii) Shoring for depths 2 – 3m	Unit: m
iii) Shoring for depths 3 – 4m	Unit: m
iv) Shoring for depths 4 – 5m	Unit: m
v) Shoring for depths 5 – 6m	Unit: m
vi) Shoring for depths 6 – 7m	Unit: m
vii) Shoring for depths 7 – 8m	Unit: m

b) Shoring for point repairs and manhole or sand/grit traps installation — Unit: m^2

The use of shoring however, does not in any way relieve the Contractor of his responsibilities in terms of the Machinery and Occupational Safety Act.

Where shoring for point repairs are specified or ordered, it shall be measured per square metre of actual pit face shored. The tendered sum shall include full compensation for shoring of the trench as specified. In the case of timber shoring, the rate should make provision for double boxing if required. Should sheet piling be used it shall be cut off 1,0 m below ground level and the remainder left in-situ (if practical).
Payment will be categorised in depth increments of 1,0 meters. The tendered sum shall include full compensation for shoring of the trench as specified.

Payment will be categorized into the following classes: (The rates are not accumulative)

i) Shoring for depths 1 – 2m	Unit: m^2
ii) Shoring for depths 2 – 3m	Unit: m^2
iii) Shoring for depths 3 – 4m	Unit: m^2
iv) Shoring for depths 4 – 5m	Unit: m^2
v) Shoring for depths 5 – 6m	Unit: m^2
vi) Shoring for depths 6 – 7m	Unit: m^2
vii) Shoring for depths 7 – 8m	Unit: m^2

c) Temporary Works: Control of Water

Where specialist dewatering measures are required for a project and are to be undertaken by the Contractor, the payment will be in terms of the items provided in the Schedule of Rates.

PSDB 8.3.6 Finishing (Reinstatement of surfaces)

PSDB 8.3.6.1 Reinstate road surfaces complete with all courses — Unit: m^3/m

The layerworks to be allowed for under this item are as follows below. The costs of the imported material to be used in terms of DB 3.6.1 and DB 5.9.4, and for surfacing to be included in this rate are:

Roads:
Asphalt surfacing 40mm thick (CCC medium / COLTO medium continuously graded to 93% Rice density)
Prime coat (Cut-back bitumen type MC-30) at a nominal application rate of 0,7 ℓ/ m^2
Tack coat at a nominal application rate of 0,2 ℓ of residual bitumen per m^2
G4 Base in 150 mm thick layers to 98% Mod AASHTO, to roadways
G5 Subbase in 150 mm thick layers to 95% Mod AASHTO, to roadways

Industrial Roads:
Asphalt surfacing 50mm thick (CCC medium / COLTO medium continuously graded to 93% Rice density)
Prime coat (Cut-back bitumen type MC-30) at a nominal application rate of 0,7 ℓ/ m^2

Tack coat at a nominal application rate of 0,2 ℓ of residual bitumen per m^2
80mm thick layer of Bitumen Treated Base (BTB) to 93% Rice
G4 Base in 150 mm thick layers to 98% Mod AASHTO, to roadways
G5 Subbase in 150 mm thick layers to 95% Mod AASHTO, to roadways

Sidewalks:
G5 Subbase 100mm thick G5 subbase to 95% Mod AASHTO on 150mm thick G7 subgrade to 93% Mod AASHTO or 100% for sand
Existing paving to sidewalks and footways
30mm thick premix to sidewalks (pavement mix / township mix)

Concrete: 25 MPa/19mm strength to 150, 200 and 250mm thickness

Brick Paving, Cobble pavers and Interlocking: To match existing or similar approved by the Employer's Agent. Minimum compressive strength of 25MPa.

The tendered rate shall be for reinstating the road layers as well as for the cost of cutting back of existing layers to provide stepped joints. The benching of each layer shall be at least 150mm and may be as wide as 200mm in some areas as per Employer's Agent instruction. The rate shall also include material, labour and equipment for cutting back the damaged premix layer to form a neat straight line. The rate shall also include the removing of the old premix by hand and replacing it with new premix.

The area and volume will be computed from the authorised dimensions measured for each layer after compaction. Payment for finishing will be additional to that for excavation covered by Clause 8.3.2. The tendered rate shall cover the costs involved as specified in SANS Clause 8.3.6.1.

[redacted]

PSDM EARTHWORKS (ROAD, SUBGRADE)

PSDM 2.3 DEFINITIONS

PSDM 2.3.1 Sand

Sand is defined as non-plastic material that conforms to the following grading analysis:

% passing	4,750 mm sieve	95% min
	0,425 mm sieve	50% min
	0,075 mm sieve	10% max

and having a maximum swell of 1.5% at 100% Modified AASHTO density.

PSDM 3.2 CLASSIFICATION FOR PLACING PURPOSES

PSDM 3.2.3 Selected Layer

The upper selected layer shall consist of a material which complies with the requirements of a G7 material as described in Table 3B in SANS 1200 M.
The lower selected layer shall consist of a material which complies with the requirements of a G9 material.

PSDM 5 CONSTRUCTION

PSDM 5.1 Precautions

PSDM 5.1.1 Dust Nuisance

The Contractor's attention is drawn to Clause 5.1.4.1 of specification SANS 1200 D. During construction, the Contractor is to make every effort to prevent sand and dust blowing from the Site, including haul roads and stockpiles, onto the adjacent roads or properties.

PSDM 5.2 Methods and Procedures

PSDM 5.2.4.2 Placing and Compaction

All fill materials shall be compacted in layers less than 300 mm thick unless approved by the Employer's Agent. The degree of compaction shall be as follows:
(a) Sand: 100% of Modified AASHTO density
(b) all other fill materials: 93% of Modified AASHTO density

The Contractor shall so organise his work that excavated material is placed directly and no additional payment shall be made for stockpiling unless instructed by the Employer's Agent in writing.

PSDM 5.2.5 Selected Layer

The upper selected layer shall be compacted to 95% of Mod. AASHTO maximum density in the case of a non-sand material. Non-sand middle and lower selected layers shall be compacted to 93% and 90% of Mod. AASHTO maximum density respectively.

All sand selected layers shall be compacted to 100% of Mod. AASHTO maximum density.

PSDM 5.2.8 Transport

The whole of the site of the works shall be deemed to be within freehaul distance.

Add the following item:

PSDM 5.2.9 Tie in to Existing Pavement Layers

Where the roadworks tie in to the existing roads, the Contractor shall cut each existing layer back to form a stepped joint. Each layer shall be stepped back 150 mm from the underlying layer. No separate payment will be made for this work and will be deemed to be included in PSDB 8.3.6.1.

PSDM 8 MEASUREMENT AND PAYMENT

PSDM 8.2 Computation of Quantities

Earthworks quantities shall be measured in compacted fill using cross-sections measured after clearing and roadbed compaction. The rates shall include all costs for the various items as scheduled including all survey costs.

PSDM 8.3.5 Selected layer compacted to 93% of modified AASHTO maximum density

[redacted]

Substitute "93 % of MAASHTO density" in the heading of DM 8.3.5 with "93 % (100 % for sand) of MAASHTO density".

Add the following to DM 8.3.5:

Separate items will be scheduled for lower and upper selected layers as well as for material from the site of works and from commercial sources. The rate for selected layers from commercial sources shall, in addition to the provisions of DM 8.3.5, allow for locating the source, complying with all the applicable precautions as set out in DM 5.1, obtaining the material, selection and transport from the source to the point on the road where it is going to be used. No payment shall be made for the removal and replacement of unsuitable imported material.

[redacted]

PSLB BEDDING (PIPES)

PSLB 3 MATERIALS

PSLB 3.1 SELECTED GRANULAR MATERIAL

Selected granular material shall be of a granular, non-plastic nature and shall conform to the following grading:

% passing 4,750 mm sieve 95% min
0,425 mm sieve 50% min
0,075 mm sieve 10% max

and shall have a compactability factor (as determined by the test given in Section LB, Part 3 of SANS 0120) not exceeding 0,4.

PSLB 3.3 CLASS OF BEDDING

Sewer pipes shall all be laid on Class B bedding, unless otherwise shown on the Drawings, or instructed by the Employer's Agent.

PSLB 3.4 SELECTION

Suitable selected bedding material will be available from the trench excavations along the route. Should additional selected granular material be required, it shall be obtained from other excavations on the site, or imported from commercial source.

PSLB 3.4.1 Contractor to Excavate Selectively for Bedding Materials

Notwithstanding the requirements of Sub clause 3.7 of SANS 1200 DB and Sub clause 3.4.1 of SANS 1200 LB regarding the use of selective methods of excavating, the Contractor shall use selective methods of excavating and shall provide and use plant that will enable him to avoid burying or contaminating material that is suitable and is required for bedding.

PSLB 5 CONSTRUCTION

PSLB 5.1.4 Compacting

The degree of compaction of the bedding shall be 100% of Modified AASHTO in sand and not less than 93% in the case of non-sand materials.

PSLB 8 MEASUREMENT AND PAYMENT

PSLB 8.1 SCHEDULED ITEMS

PSLB 8.2.1 Provision of bedding and selected fill material from trench excavations

a) Selected granular material — Unit: m³

b) Selected fill material — Unit: m³

PSLB 8.2.2 Supply only of bedding material by importation

PSLB 8.2.2.3 From commercial sources (Provisional)

a) Selected granular material — Unit: m³

b) Selected fill material — Unit: m³

Add the following items:

c) 13mm stone — Unit: m³

d) 19mm stone — Unit: m³

Where the use of a crushed stone bedding layer in the trench bottom has been authorised by the Employer's Agent, it will be measured by the volume calculated according to the length multiplied by the minimum base width and specified thickness.

The tendered rate shall cover the cost of preparation of the trench bottom to accommodate the the crushed stone layer in order to produce a stable platform for the pipes.

Add the following item:

PSLB 8.2.6 Geotextile / Geomembrane wrapped around crushed stone bedding with 300mm overlay
A2 or similar approved — Unit: m²

[redacted]

The filter fabric will be measured separately by area based on the specified trench width, a stone bedding thickness of minimum 150 mm, unless a greater depth has been specified by the Employer's Agent, and an overlap of 300 mm. The tendered rate shall include full compensation for procuring, supplying, cutting, overlapping, jointing, placing and protecting the Geotextile / Geomembrane as specified as well as for wastage.

[redacted]

PSLD SEWERS

PSLD 3 MATERIALS

PSLD 3.1 PIPES, FITTINGS AND PIPE JOINTS

PSLD 3.1.5 uPVC Pipes

uPVC Class 34 heavy duty pipes and couplings to SANS 791 shall be used for the new sewer pipes to be laid.

PSLD 3.5 MANHOLES, CHAMBERS, ETC.

PSLD 3.5.1 Bricks

Bricks shall be obtained from an approved manufacturer and shall be special grade Class NFX (Non-facing Extra) clay bricks to SANS 227 with a nominal compressive strength of 21 MPa and a water absorption of not more than 10%. In addition, perforated bricks with cavities not exceeding 25% are acceptable. The Contractor shall submit to the Employer's Agent samples of the bricks that he intends using in the construction of the Works (see sub clause 3.1 of SANS 1200 A or SANS 1200 AA, as applicable). The samples of bricks that are approved will be retained by the Employer's Agent.

PSLD 3.5.2 Precast concrete sections

The concrete used to manufacture the precast concrete sections shall conform to clause PSLD 1.2.4. Where precast concrete manholes are specified, the joints between rings shall be watertight. The precast manhole sections shall comply with SANS 1294. The Contractor shall submit a method statement to the Employer's Agent for approval prior to construction.

PSLD 3.5.4 Concrete

Concrete shall be strength concrete in accordance with SANS 1200G as applicable and only uncontaminated dolomitic aggregate and free from organic material and hard burnt lime shall be used in any concrete that may be exposed to sewerage or sewer gases. The insolubility content of the completed concrete may not exceed 25%.

PSLD 3.5.5 Sand and aggregate

Uncontaminated dolomitic aggregate and dolomitic sand shall be used in the manufacture of all precast concrete manhole units and in the manufacture of all concrete or mortar in direct or indirect contact with sewage and/ or sewer gases.

PSLD 3.5.7 Step Irons

Step irons shall be installed in all manholes with a depth exceeding 1,0m. Step irons shall be manufactured from a polypropylene copolymer and shall have anti-slip blocks on the stepping surface. Step irons manufactured from other material shall be approved by the Employer's Agent. The step irons shall be position on the downstream end (manhole exit point) of the manhole. Step irons to be staggered 300mm centre to centre.

PSLD 3.5.8 Manhole Covers and Frames

Covers and frames of manholes in roadways shall be finished flush with the final road level. Where manholes are not in the roadway, the final cover level shall be constructed to 150mm above the natural ground level unless otherwise indicated. Covers and frames for manholes shall be as approved by the Employer's Agent.

PSLD 3.5.9 Cement

Portland Slag Cement CEM II/B-S 42,5 or any other similar approved cement shall be used for all mortar and concrete work.

PSLD 5 CONSTRUCTION

[redacted]

PSLD 5.6 MANHOLES, INSPECTION CHAMBERS, ETC.

PSLD 5.6.2 Benching

Concrete for benching (and manhole floors) shall be Class 20 MPa/13mm strength concrete and shall be cast in-situ. The concrete shall conform to SANS 1200G.

PSLD 5.11 Watertightness of Repairs

Repairs shall be visually inspected for ingress or egress of water. All repairs shall be watertight.

PSLD 5.12 Plasterwork and Grouting

All internal faces to repairs shall be plastered using Lafarge Aluminate's Corrosion Protection (CP4) Grout, or any Employer's Agent approved similar product being a ready mixed calcium aluminate and dolomitic sand mix suitable for plastering with a maximum setting time of 4 hours. The plaster shall be 13mm thick. Prior to using any product for plastering purposes, technical recommendations shall be obtained from the supplier for mixing, placing and curing.

An Employer's Agent approved ready mixed calcium aluminate and dolomitic sand mix, approved by the Employer's Agent, suitable for grouting with a maximum 2 hour setting time shall be used to repair areas subject to severe corrosion. Prior to using the material, technical recommendations for mixing, placing and curing shall be obtained from the supplier and provided to the Employer's Agent.

PSLD 8 MEASUREMENT AND PAYMENT

PSLD 8.2 SCHEDULED ITEMS

PSLD 8.2.1 Supply, lay, joint, bed (Class C), and test pipeline

Unit: m

In the heading:
Change "Supply, lay, joint bed (Class C), and test pipeline" to "Supply, handle, lay, bed (for flexible or rigid pipes), joint and test pipes complete (waste and cut lengths to be allowed for in these rates)".

The rate shall also cover all costs related to using an internal pulling system for jointing and backfilling the pipes.

PSLD 8.2.3 Manholes

Unit: No

Add the following:
The depth increment for manholes will be per each 1,0m.

For the purposes of measurement and payment, the depth of a manhole is defined as the depth from the top of the natural ground/ finish surface level to the lowest invert level of the manhole (the downstream invert)

The rate shall cover the cost of construction, manufacturing, supplying, handling and transport of the manholes complete with short pipes and all flexible couplings.

PSLD 8.2.8 Anchor Blocks

Unit: m^3

Add the following:
Payment for anchor blocks shall be made for pipes with gradients steeper than 1:10 and shall be measured in cubic metres.

PSLD 8.2.11 Connection to sewer at existing manholes

Add the following:
a) Break into existing sewer manhole and connection of new sewer

Unit: No

The unit of measurement shall be the number of connections of the new sewer into existing live manholes indicated on the relevant drawings.

The tendered rate per connection shall include full compensation for all necessary material, labour, plant and tools required to excavate and expose the existing manhole, which the new sewer is to connect into, and for all additional excavations which may be required to satisfactorily complete the connection to break into the existing sewer manhole and connect the new sewer including flexible joint, make good any damage caused during the breaking in process, and deal with the flow in the existing sewer.

The rate shall also include the provision and reconstruction of the channel in the existing manhole, including all benching, etc, the taking of all necessary preventative and precautionary measures whilst making the connection, blocking off the ends of any sewer pipe which is to be abandoned, and to liaise with and abide by the requirements, if any, of the Employer before and during construction of the connection.

b) Construct new manhole over live sewer Unit: No

The tendered rate shall include full compensation for all material, labour, plant and tools to excavate and expose the existing sewer (excavation will be measured under PSDB 8.3.2, to construct the new manhole including flexible joint, to break into the live sewer and temporarily accommodate the sewage flow, to provide and construct the channel and benching in the new manhole, and to block-off and seal any sewer line which is to be abandoned. The depth increment for manholes will be per each 1,0m.

[redacted]

PSMK KERBING AND CHANNELLING

PSMK 3 MATERIALS

PSMK 3.1 CONCRETE

Add the following:

The Contractor shall timeously submit the concrete mix design for cast-in-situ kerbing to the Employer's Agent for approval and no kerbing shall be placed before the mix design has been approved.

PSMK 3.2 PRECAST KERBING AND CHANNELLING

PSMK 3.2.1 General

Add the following:

The profile/dimensions of precast kerbs and channels must be in accordance with the details shown on the drawing.

PSMK 3.2.2 Nominal Lengths of Precast Units

Units laid to a radius of 1,0 m or greater shall be precast and shall have the following nominal lengths:

Radius in Plan	Nominal Length
1,0 m to 20,0 m	0,3 m
Greater than 20 m and straight	1,0 m

PSMK 3.3 Cast-In-Situ Concrete

Cast-in-situ concrete for curves less than 1 m and for transitions shall be 25 MPa / 19 mm.

PSMK 3.9 BEDDING MATERIAL

Replace the contents with the following:

Bedding and backing for precast kerbs and channels shall be 15MPa / 13 mm concrete to SANS 1200 GA, to the dimensions indicated on the Drawings.

PSMK 5 CONSTRUCTION

PSMK 5.1 EXCAVATION AND BEDDING

Replace "90%" with "93% (100% for sand)

PSMK 5.2 KERBING AND CHANNELING OF PRECAST CONCRETE

Replace the first sentence with:

Kerbing and Channelling of precast concrete must be placed on a concrete bedding as required in PSMK 3.9.

Add the following sub clauses:

PSMK 5.12 EXISTING KERBING

The kerbs to be removed shall be inspected by the Employer's Agent in the presence of the contractor prior to their removal to determine the number of kerbs suitable for re-use.

The contractor is advised to use the greatest care when removing those kerbs earmarked for re-use, for should the kerbs be damaged and be subsequently rejected, he shall replace them with new kerbs at his own cost.

PSMK 5.13 STREETNAME KERBING

[redacted]

Street names must be cast into a full length barrier kerb. The street name must be painted white on a green background and positioned as indicated by the Employer's Agent.

PSMK 5.14 WATERTESTING OF KERBS

After the kerbs, channels inlets etc. have been constructed the kerbs, channels, etc must be cleaned and tested with water to ensure that no water is standing in any channel. This test must be done after the base has been completed but before the placing of the surface seal. Any adjustments to kerbs, channels etc must be completed before the surface seal is applied.

PSMK 5.15 EXPANSION JOINTS

These joints shall be provided at 10 m intervals, through both the kerb and channels. These joints shall be 12 mm wide, filled with a compound and sealed with a polysulphide sealant. Costs of furnishing the materials and construction of the joint are deemed to be included in the laying rate.

PSMK 7 TESTING

PSMK 7.2 CAST-IN-SITU AND EXTRUDED KERBING AND CHANNELLING

PSMK 7.2.1 General tests

Delete this sub clause.

PSMK 7.2.2 Alternative tests

Replace the heading and contents of this sub clause with the following:

PSMK 7.2.2 Tests

The Contractor shall carry out a minimum of three cube crushing tests per 1 000 m of kerbing placed. The cost of such tests shall be deemed included in the rates tendered for kerbing.

One cube crushing test shall consist of a set of six cubes made with concrete taken from the mixer, the kerbing machine or from any part of the work as ordered.

If, after three cubes of any set of six cubes have been tested after 28 days in an approved laboratory, the average crushing strength is found to be more than 3 MPa below the specified strength, the kerbing represented by the cubes will be rejected.

The Contractor may apply for resubmission of the rejected section on the basis of cores drilled from this section and tested for the estimated actual crushing strength in accordance with SABS method 865 (excluding appendix A). The cost of drilling and testing the cores is for the Contractor's account, regardless of the outcome of the tests on the cores. The number of cores required will be determined by the Employer's Agent and the criterion for rejection or acceptance of the section represented by the cores shall be as specified above for cubes.

PSMM ANCILLARY ROADWORKS

PSMM 8 MEASUREMENT AND PAYMENT

PSMM 8.4 SCHEDULED ITEMS FOR ROAD MARKINGS

Add the following to MH 8.4.1:

PSMM 8.4.1 Non-reflectorised Paint Applied At Nominal Rate Of 0,42 ℓ/m^2 Unit: km or m^2

Markings for parking bays shall be measured and paid for as "characters and symbols". No additional measurement and payment shall be made for "(e) Traffic island markings" and payment shall be made under the appropriate rates of payment item MM 8.4.1.

Add the following to MM 8.4.4:

PSMM 8.4.4 Setting Out And Premarking

No additional payment shall be made for the premarking and/or dotting of lines or special markings and all relevant costs are deemed as covered by the tendered rates for MM 8.4.1.

[redacted]

3.4.2.2 PARTICULAR SPECIFICATIONS

SPECIFICATIONS FOR SEWER PIPELINE REPLACEMENT

This part of the Works Specifications contains specifications for sewer pipeline replacement not covered by the Standard Specifications.

The number of each clause and each payment item in this part of the Works Specification is prefixed with a PS-T to differentiate these clauses and items.

The following specifications are covered under this part of the Works Specifications:

PARTICULAR SPECIFICATIONS FOR SEWER PIPELINE REPLACEMENT

CONTENTS

PS-TA OVERPUMPING OR BYPASSING OF FLOWS
PS-TB REPAIR OF PIPELINE AND MINOR WORKS (IF REQUIRED)
PS-TC CCTV INSPECTION OF PIPELINE
PS-TD CLEANING OF PIPELINE
PS-TE CONNECTION OF SAND/GRIT TRAPS TO SEWER
PS-TF GENERAL SPECIFICATIONS
PS-TG HDPE PIPES FOR HORIZONTAL DRILLING

ACCOMMODATION OF TRAFFIC SPECIFICATIONS

[redacted]

PS-TA OVERPUMPING OR BYPASSING OF SEWER FLOWS

PS-TA 1 SCOPE

This particular specification covers the over-pumping of sewer flows that may be required to facilitate pipeline cleaning, CCTV inspections and pipe replacement.

PS-TA 2 GENERAL

The flow in the pipe can only be stopped without over pumping of sewer flows for short periods. Pumps and pipes MUST have the necessary capacity to drain the existing sewer without the upstream lines surcharging. Under no circumstances would overland flow of sewer be accepted and penalties will apply according to the Environmental specification in this document.

Odour control will have to be incorporated at all open sewer sections and temporary storage of material removed from the sewers, through micro-misting and deodorizing. During construction, the Contractor will take all precautions to avoid damage to sewer lines that may be caused by surcharging. Further precautions must be taken to ensure that the flow control operations do not cause flooding or damage to public or private property being served by the sewers involved.

The Contractors shall be solely responsible for the clean-up, repair, property damage costs, environmental damage costs and claims resulting from failure of the over-pumping system(s). If the downstream side of the portion of the line being upgraded/repaired and where over-pumping system discharges into a manhole/ sump, becomes surcharged, an emergency link to the nearest storm water system shall be provided. This measure is only intended for the event of an unforeseen emergency, during of which a catastrophic failure of the Contractors primary and standby over pumping system occurs. Under no other circumstances will sewerage be allowed to discharge into the Storm water system or to flow in the open on the road sidewalk or verge systems.

Any accidental discharges must immediately be treated with an approved disinfectant and the affected area cleaned up in the manner approved by the Employer's Agent. All over-pumping activities shall adhere to the Construction Environmental Management Plan.

PS-TA 3 OVER PUMPING SYSTEMS

The Contractor shall submit an official over-pumping plan and method statement to the Employer's Agent for approval before any work may commence. The Contractor shall be held responsible for all Over-pumping and related activities. The Contractor shall also submit a detailed plan for the over-pumping of flows for each portion of works. The plan shall include:

- The time of commencement and time of completion
- Include the proposed location of pumping equipment, including plugs.
- Include all personnel responsible for over-pumping activities.
- The flow elevations to be monitored.
- State the flow rates, pump sizes, delivery pipe routes and delivery pipe capacities
- Provide pump type, brand, model and performance curves
- Include any traffic accommodation and noise suppression
- Public notification program

PS-TA 4 PLANT

The Contractor shall design an over-pumping plant for each system and obtain approval from the Employer's Agent prior to commencement. The over-pumping plant consists of the items located in or around the diversion manhole/ sump and mostly, but not entirely consists of the pumps, piping, isolating vales, non-return valves, screens, electrical power generators, electrical starting equipment, level controls, flow meters, flow data loggers, hour meter and lifting equipment. The contractor's plant design for each pumping system shall conform to the following requirem

- Have sufficient capacity to handle full flow conditions of the incoming pipe(s)
- Have a back-up pump and generator ready (if applicable) available on site

[redacted]

- Silent pack Generators to be used or Alternative measures to reduce noise pollution. The Contractor shall obtain the necessary Noise Exemption Permit if required.
- Have adequate pump control and protection
- Pumps shall have a solid passing's capacity of not less than 75mm
- Pumps used for over-pumping shall have an hour meter to monitor the usage of the pump(s).
- Incorporate a flow control/ monitoring system able to measure and keep history log of the pump flows, levels of the effluent in the manholes/ sumps that are connected to the main line (Upstream and Downstream) and house connection chambers (Erf chambers).
- Diesel pumps should be enclosed by sandbags to reduce noise pollution up to a height of 1.0m.
- Sufficient fuel shall be available on site for the pump(s) or other equipment or as agreed with the Employer's Agent. All pipes and equipment to be leak proof, under no circumstances shall leaking equipment be accepted. Drip trays must be provided.

PS-TA 5 CONSTRUCTION

For each of the above applications where over-pumping is required, the sewer sections shall be temporarily plugged and blocked upstream and downstream and the flow diverted by over-pumping without upstream surcharge of the sewer. The Contractor shall be responsible to isolate the rehabilitation/ work area from both upstream and downstream surcharge conditions.

The pumps, their related power supply and controlling systems (Including standby systems) shall be planned, designed and installed in such a way as to be easily maintained in order to mitigate the risk of power supply, structural, operational or mechanical failure in such a way that the risk of surcharging of the sewer system or over-flow and pollution is mitigated. All additional infrastructure, plant, material and labour required to effectively accommodate this functionality and accessibility of the over-pump system, shall be included in the tendered rates and designed/ signed off by a Professional Engineer.

The by-pass pipeline(s) for over-pumping shall be fully watertight. The Contractor's design and Method statements shall address contingencies in the event of equipment malfunction. Compensation for the design of the over-pumping system and all associated plans and approvals shall be included in the tendered rate and shall include all cost pertaining to labour, equipment and materials.

The over-pumping of the sewer rehabilitation will require HDPE or alternative rising mains to be laid above ground. Where road closures are not permitted the contractor shall construct a ramp and obtain approval from the Employer's Agent and from the local Road Authority in order to protect the pipe at road crossings. The design, sizing configuration, operating and maintaining of the over – pumping activities are the sole responsibility of the contractor. A detailed traffic accommodation plan shall be submitted and approved by the Employer's Agent before construction commences.

A responsible person shall be nominated to attend to the over-pumping operation and shall be in attendance for the duration of the over-pumping. A second responsible person shall continually monitor and record the flow levels at the upstream and downstream manholes as well as all connections and house connections chambers.

Warning must be given immediately should the pumps not cope with the inflow or malfunction of any equipment. The Contractor is obliged to immediately notify the Employer's Agent and report the steps to control the incoming sewer flow.

PS-TA 6 MEASUREMENT AND PAYMENT

PS-TA 6.1 OVER-PUMPING OR BYPASSING OF FLOWS

The Contractor shall perform over-pumping of the sewerage flow. The Sewerage shall be over-pumped directly to another part of the sewerage system. No open channel flow or overland flow or discharging into the Storm water system is allowed. Over-pumping shall be paid for the actual hours of over-pumping per one overpumping system as agreed with the Employer's Agent Representative prior to over-pumping taking place. If more than one overpumping system is required, a method statement shall be submitted for approval from the Employer's Agent.

Over-pumping (per one overpumping system) …….. Unit: h [redacted]

The tendered sums shall include full compensations for designing, operating, and maintaining of over-pumping activities according to the over-pumping design plan submitted as well as the cost of removing the equipment and restoring the site to its original condition on completion, all in accordance with the relevant pipe sizes as indicated in the Schedule of Rates.

PS-TA 6.2 Extra over for provision of additional pipe when length exceeds 100m Unit: m

Where the delivery pipeline exceeds 100m in length, an extra over payment will be applicable for the additional length of piping required for the over-pumping operation in accordance with the relevant pipe sizes as indicated in the Schedule of Rates.

[redacted]

PS-TB REPAIR OF PIPELINE AND MINOR WORKS (IF REQUIRED)

PS-TB 1 SCOPE

This particular specification covers the general requirements regarding the repair of pipelines by trench dig methods either by machine or hand excavation and reinstatement of roads, sidewalks, public open spaces and private property.

PS-TB 2 GENERAL

This specification is aimed at those pipelines that must be repaired by means of point excavation and minor works. The proposed method of work is to expose the existing damaged pipe for the purposes of making repairs. The trench excavation shall be such that the base width includes sufficient working space. The existing pipe may be eroded or damaged and excavation in close proximity to it will have to be performed with great care to avoid collapsing the pipe. The excavation around the existing pipe from 0,5m above the crown shall be done by hand. Hand excavation is expected to form a major part of the works, especially in close vicinity of damaged pipes and existing services.

CCTV camera inspection to monitor the final result might be required by the Employer's Agent. In this case a video recording shall be handed to the Employer's Agent.

The work involved with point repairs and minor works shall be in accordance with SANS 1200 specifications and will be measured and paid separately. The depth will be measured to actual bottom of the trench. Measurement and payment for excavation will be per m^3.

PS-TB 3 PLANT

Mechanical excavating equipment may be used if required. If over-pumping is required, the bypassing operation must be in place before the sewer pipe to be repaired is excavated.

For compaction purposes, mechanical equipment is to be used. To control water inflow into the excavation, pumps will be necessary.

PS-TB 4 MATERIAL

The pipe material for all sewer repairs and new sewer pipes up to 400 mm diameter to be Class 34 uPVC heavy duty and will be measured and paid for different pipe sizes under the Schedule of Rates.

For repairs to larger diameter pipes the Contractor shall obtain approval from the Employer's Agent for type of material to be used for the repair.

PS-TB 5 EXCAVATION

The contractor will have to excavate down from the surface and remove the damaged pipe and repair the pipe by replacing with new material.

The Contractor must take precautionary measures not to discharge excavated material into the existing pipeline. It will be the Contractor's responsibility to clean the existing line of all material at his own cost should this occur. This excavation shall be backfilled after the repair in compacted layers of not more than 300mm and the area reinstated.

All excavated material shall be spoiled off site including any material removed from the pipeline.

PS-TB 6 SHORING

Shoring may be ordered by the Employer's Agent depending on the nature of the in-situ material and depth of excavation. In the event of deep excavations for point repairs, shoring will be required. Measurement and Payment will be per m^2 of the side wall areas eg. pit faces.

PS-TB 7 DEWATERING

The Contractor will be responsible for the normal control of ground water in the trench. If excessive ground water is encountered due to a high water table, the Employer's Agent may approve suitable dewatering methods and equipment. Payment items have been provided in the Schedule of Rates should this be necessary.

PS-TB 8 Measurement and Payment

Excavation will be paid for per m^3 for different depth categories.

The rate tendered shall include full compensation for all plant and equipment, supervision, labour and all incidentals required to perform the operation. Backfilling in compacted layers of not more than 300mm shall be included in the rate.

[redacted]

PS-TC CCTV INSPECTION OF SEWER PIPELINE

PS-TC 1 SCOPE

This particular specification covers the inspection of pipelines using closed-circuit television (CCTV). The inspections and assessments are those necessary when pipelines are replaced or newly installed to ensure quality of workmanship and construction materials.

PS-TC 2 GENERAL

The CCTV system shall be used for:

- The monitoring of the pipeline after cleaning
- Making a recorded inspection of the pipeline prior to repair/replacement.
- Making a recorded inspection of the pipeline after repair/replacement.
- Manhole inspection with incoming and outgoing pipeline when required by the Employer's Agent.
- Or as instructed by the Employer's Agent.

PS-TC 3 PLANT

The CCTV System shall comprise at least of:

- A Remote controlled robot camera and self-propelled tractor.
- The tractor shall have an adjustable gantry to set the height of the camera to the centre of the pipe. A skid-mounted camera shall be acceptable.
- The tractor shall carry adequate lighting equipment
- A High resolution colour monitor with minimum of 470TVL.
- Camera with ability to pan and tilt 360°
- A suitable device to store data
- An Integral distance recording on the image
- The Camera must have at least 10x optical zoom.
- The camera shall have sufficient lighting to illuminate the pipeline being surveyed to produce a good clear image.
- The equipment that enters the manhole and pipelines shall be waterproof and comply with the safety requirements concerning the presence of explosive gasses.

PS-TC 4 INSPECTION

The system shall be able to provide a live, high resolution color image that can be viewed and recorded at a nearby location. The recordings shall be accompanied by a log giving all relevant details of the inspection. The Contractor shall implement all the necessary safety measures and isolation of pipelines or over-pumping of pipe flows.

The log shall identify:

- Cracks and fractures
- Deformed, collapsed and broken pipes
- Dropped inverts
- Displaced and open joints
- Internal surface damage
- Debris and silt

[redacted]

- Obstructions
- Infiltrations

Manholes must be inspected for all defects, confirmation of pipe material and pipe sizes for all incoming and outgoing pipes. All the pipes shall also be inspected by CCTV up to a length of 3 meters from the manhole for all pipes. Photographic evidence of the manhole condition must also be submitted to the Employer.

PS-TC 5 ACCEPTANCE

After the line has been installed and cleaned, a CCTV camera inspection shall be made in the presence of the Employer's Agent and the recording/ CCTV footage and the log thereof shall be handed to the Employer's Agent.

PS-TC 6 MEASUREMENT AND PAYMENT

The initial CCTV inspection to assess the condition of the pipeline shall be paid separately. Payment for the CCTV inspections undertaken for the pipe replacement operation shall be included in the related pipe replacement pay items. Payment for the final CCTV inspection shall be included in the rates for joint sealing, or repair. Any necessary isolation of the pipeline and necessary over-pumping activities shall be paid for separately.

PS-TC 6.1 CCTV INSPECTION AND ASSESSMENT

Pipes shall be inspected using CCTV camera inspections to assess their condition prior to rehabilitation being undertaken. The Contractor shall provide a recording of the CCTV inspection in video format and the condition of the pipes are to be assessed and reports produced using the WinCan or similar approved system.

The Engineer may require the Contractor to undertake CCTV Inspections of other pipes.

CCTV Inspection and Assessment ..... Unit: m

The unit of measurement shall be linear meter of pipeline being measured Centre to Centre of adjacent manholes or to the stopping point whichever is applicable. Separate items have been scheduled for different ranges of pipe diameters.

The rate shall include full compensation for CCTV establishment, de-establishment, inspection and assessment as well as profiling of the existing host pipe including camerawork, provision of inspection reports and recordings. Should the Employer's Agent not accept the CCTV inspection due to visual clarity or quality, the Employer's Agent will issue a written instruction to the Contractor who will be required to redo the CCTV inspection at his own cost.

PS-TC 6.2 MANHOLE INSPECTION

Manhole Inspection ..... Unit: No.

For manhole inspection, the unit of measurement shall be per number (No.) of manholes inspected. The rate tendered must include for all costs for locating the manhole, assessing the condition of the manhole, compiling photographic evidence of the manhole, conduct CCTV inspection up to a length of 3m in all incoming and outgoing pipes, confirming the pipe material and pipe size. It must be assumed that all manholes will have three (3) incoming pipes and one (1) outgoing pipe.

PS-TD CLEANING OF SEWER PIPELINE

PS-TD 1 SCOPE

This particular specification covers the general requirements regarding the cleaning of sewer pipelines in preparation for the extension/replacement/ CCTV inspection.

PS-TD 2 GENERAL

The thorough cleaning of pipelines is an essential prerequisite for the successful extension/replacement/ CCTV inspection. This specification is aimed at those pipelines that preclude man entry. It is expected that the cleaning will be performed in conjunction with a simultaneous CCTV camera inspection to monitor performance and progress.

PS-TD 3 SUPPORTING SPECIFICATIONS

Sewer Jetting Code of Practice WRc 1st Edition April 1997

PS-TD 4 PLANT

The contractor may use any of the following cleaning methods, to suit the particular conditions of the section of pipe:

- High velocity jet sewer cleaning equipment shall have a selection of two or more high velocity nozzles capable of producing a scouring action from 15 to 45 degrees.
- Mechanically powered equipment shall be used for cleaning of debris, incrustations and obstacles that cannot be removed by any other above methods.

PS-TD 5 DESIGN

The contractor shall submit a method statement for cleaning the pipeline.

PS-TD 6 CLEANING

PS-TD 6.1 Cleaning Operation

The following criteria should be met at all times when the cleaning of the pipelines is done:

- All silt and debris must be removed completely.
- Care to be taken when high pressure jetting cleaning is used to avoid further deterioration of the pipeline(s), creation of sink holes or pipe collapses.
- All foreign material such as rags, fats, bacteriological slimes, roots, soft encrustations and grease shall be removed.
- Intruding or protruding connections, encrustations such as calcium carbonate, the residual crust of corroded pipe wall and other hard deposits should be removed by mechanical or high pressure water cutter equipment.
- All loose fragments of pipe that may foul the insertion of the lining shall be removed.
- The Contractor shall implement all the necessary safety measures.
- The Contractor shall implement any necessary over-pumping of flows.

PS-TD 6.2 Disposal of Material

All material shall be collected by means of a sand trap, weir or dam in the downstream manhole and the debris shall be removed from the pipeline. The contractor shall remove and dispose of all solid waste generated as part of the pipe preparation at the private "Vissershok Waste Management Facility (Pty) Ltd", Frankdale Road, Milnerton which is situated off the N7 on the Frankdale Road. Any contaminated liquid wastes shall be disposed of in accordance with the approved construction environmental management plan. The contractor shall implement any necessary over-pumping of flows.

PS-TD 6.3 Removal of Obstructions by Point Repairs

If an obstruction is encountered which cannot be removed by methods operating within the pipe it shall be pointed out to the Employer's Agent. The Employer's Agent may instruct the contractor to excavate down from the surface and remove the obstruction and repair the pipe. The excavation shall be backfilled and the road reinstated according to the specification given by the Employer's Agent in this document. The work involved with Point Repairs shall be in accordance with the Particular Specification PS-TB: Repair of Pipeline and Minor Works and will be measured and paid separately.

PS-TD 6.4 Root Removal

Cleaning of some pipes may require the removal of roots. Any root cutting must be reported to the Employer's Agent prior to commencement. The Contractor must have and use suitable root cutting/removal equipment. It must be anticipated that both root cutting equipment and high pressure jetting will be required. In certain circumstances, with the Employer's Agent's approval, it may be more economical to remove the roots by open excavation.

PS-TD 7 INSPECTION

After the sewer line has been cleaned and prior to the pipe being repaired, a CCTV camera inspection shall be made in the presence of the Employer's Agent's Representative and the video recording thereof shall be provided in a suitable format to the Employer's Agent. The acceptance of the pipeline cleaning will be based on the extent of the CCTV inspection. The Employer's Agent may request the Contractor to redo the entire or portions of the pipeline if the CCTV footage illustrates non-compliance with any of the criteria under PS-TD 6.1 at no additional cost. The cleaning of the pipeline and CCTV inspection would be repeated till the Employer's Agent is satisfied that the pipe has met all criteria under PS-TD 6.1.

PS-TD 8 MEASUREMENT AND PAYMENT

The bulk cleaning of pipelines shall be measured and paid for separately for the different ranges of pipe diameters.

PS-TD 8.1 BULK CLEANING

Bulk Cleaning ..... Unit: m

The unit measured shall be linear meters of the pipeline cleaned. Separate items have been scheduled for different ranges of pipe diameters.

The rate tendered shall include full compensation for the establishment, de-establishment, provision of equipment, bulk cleaning of pipelines, including associated CCTV inspections and the removal of cleaned material and or transporting and disposal according to the Environmental Management plan.

The cost for the cleaning of pipelines during any repairs as well as the final cleaning after completion of the repairs is considered to have been included in the rates.

PS-TD 8.2 ROOT REMOVAL

Cleaning of some pipes may require removal of roots. The Contractor must have and use suitable root cutting/ removal equipment. It must be anticipated that both root cutting equipment and high pressure jetting will be required. In certain circumstances, with the Employer's Agent's approval, it may be more economical to remove the roots by Open excavation. Any root cutting must be reported to the Employer's Agent prior to commencement.

Root cutting and removal ..... Unit: m

The root cutting and removal operation has been measured per meter for differing pipe diameters. The rates are to include for transport and disposal in accordance with the Environmental Management plan.

PS-TE CONSTRUCTION OF SAND / GRIT TRAPS

PS-TE 1 SCOPE

This particular specification covers the construction of sand / grit traps that may be required on instruction of the Employer's Agent to facilitate sand / grit removal from sewer pipelines.

PS-TE 2 GENERAL

Sand/grit traps shall be circular precast concrete units obtained from reliable concrete pipe manufacturers. Sand/grit traps shall extend between 700mm and 1 000mm below the sewer pipe identified for location of the sand/grit trap. Sand/grit traps shall protrude 300mm above natural ground level or as specified by the Employer's Agent.

PS-TE 3 PLANT

Mechanical excavating equipment will be used. Hand excavation is expected to form part of the works, especially in close vicinity of damaged pipes and existing services. If over-pumping is expected, this operation must be in place before the pipe is isolated for the installation of the proposed sand/grit trap. Mechanical compaction equipment may be used where necessary. Water pumps will be necessary to control water inflow.

PS-TE 4 MATERIAL

The sand/grit traps shall generally be 1800mm nominal diameter circular precast concrete units. The starter precast concrete unit shall have a base cast integrally with this unit and side extensions to overcome lift. One of the precast concrete units will have openings for reconnecting the incoming and outgoing sewer pipes. The sand / grit trap shall have a concrete cover slab with access manhole cast into the slab with cover and frame. The circular precast concrete units shall be in various heights as per the manufacturers' specifications for different depths of sand/grit trap. The jointing of the various circular precast concrete units will be to the suppliers' specification. The constructed sand/grit trap must be water tight.

PS-TE 5 EXCAVATION FOR SAND/GRIT TRAPS

The contractor will have to excavate down from the surface for different depths of sand/grit trap and remove the existing sewer for the construction of the sand/grit trap. The contractor must be careful not to discharge excavated material into the existing sewer. It will be the Contractor's liability to clean the sewer at his own cost. The excavation shall be backfilled after the sand/grit trap is constructed in compacted layers of not more than 300mm and the area reinstated. The contractor will have to dispose of all excess excavated material off site.

PS-TE 6 SHORING

The contractor will have to provide proper shoring depending on the nature of the in-situ material and depth of excavation of the sand/grit trap.

PS-TE 7 DEWATERING

The Contractor will be responsible for the normal control of ground water in the trench. If excessive ground water is encountered due to depth of excavation, the Employer's Agent might order proper dewatering methods and equipment to be used. Payment items have been provided in the Schedule of Rates should this be necessary.

PS-TE 8 DE-CONNECTION AND RE-CONNECTION OF PIPES

The excavation shall take place up to the exposure of the pipe before proceeding further. The blocking off of the incoming and outgoing pipes shall be done using suitable stoppers. The over-pumping of flows will be in operation to allow further excavation. Ensure the de-connection of the section of sewer pipes where sand/grit trap is to be located.
Excavation shall proceed below the pipe to the final/determined level to create the "trap" section. An in-situ base layer shall be installed and stabilised with suitable granular material. The base starter section and the other sections shall be installed according to the drawings. The sewer pipeline between the new sand/grit trap and the existing pipes shall be re-connected. Backfilling shall be done as per specification in this document.

PS-TE 9 MEASUREMENT AND PAYMENT

PS-TE 9.1 CONSTRUCTION OF SAND/ GRIT TRAPS

Construction of Sand/Grit traps …….. Unit: No.

The unit of measurement shall be for the different depth categories. The rate tendered shall include full compensation for all costs to supply the materials complete as per drawing SEW01, all incidentals required, plant and equipment, supervision, labour, construction and installing of the new sand/grit trap and waterproofing the sand/grit trap. Backfilling in compacted layers of not more than 300mm increments shall be included in the rate. Excavation and shoring will be paid separately.

[redacted]

PS-TF GENERAL SPECIFICATIONS

PS-TF 1 SCOPE OF WORK

PS-TF 1.1 Excavation and Backfilling

Open Trench Construction

The works will mostly be situated in a developed urban environment, which will range from industrial areas to residential areas.

Depth of Excavation

The minimum cover to all new sewer mains shall be 600 mm except under roadways where the cover shall be 900 mm.

Payment for Excavation and Backfilling

The price tendered and paid for excavations shall be inclusive of the excavation, backfilling and compaction, including full compensation for the transport and satisfactory disposal of surplus soil, supervision, labour, plant, equipment and any incidentals necessary for the completion of the work.

No payment will be made for over excavation. Any variations in trench depths shall cause the price tendered and paid to vary proportionally, rates are not accumulative.

Payment for sewer pipeline excavations will be measured in linear meters to a depth of between 0.0 to 1.0 meters (one meter) thereafter in steps of 1.0 meters. Payment for short trenches for minor repairs or for installation of sand/grit traps will be measured in cubic meters to a depth of between 0.0 to 1.0 meters (one meter) thereafter in steps of 1.0 meters.
The rates are not accumulative.

Depth to invert not exceeding 0 to 1.0 meters
Depth to invert exceeding 1.0m but not 2.0 meters
Depth to invert exceeding 2.0m but not 3.0 meters
Depth to invert exceeding 3.0m but not 4.0 meters
Depth to invert exceeding 4.0m but not 5.0 meters
Depth to invert exceeding 5.0m but not 6.0 meters
Depth to invert exceeding 6.0m but not 7.0 meters
Depth to invert exceeding 7.0m but not 8.0 meters

Maintaining Excavations in Safe Condition

The sewer mains are generally located in a road reserve. The Contractor shall be solely and entirely responsible for maintaining the excavations in a safe condition and this responsibility shall in no way be diminished by any instruction from the Employer's Agent to take additional or improved protection or precautionary measures.

It should be noted by Tenderers that plastic danger tape alone is not regarded as adequate protection around excavations and its sole use for that purpose shall not be approved.

Trenches in Roadway

Trenches in roads shall be backfilled as early as possible after the completion of pipe laying, repairs or any work that necessitates excavations in a road or within a road reserve.

The road surface shall be cut with a diamond tipped saw or other approved method by the Employer's Agent in writing before commencing with the excavation.

Site to be kept tidy

The working area shall be kept in a neat and tidy condition by the Contractor and the rates shall include keeping the road gutters clear of excavated material at all times.

Surplus excavated material shall not remain on the work site for more than 48 (forty eight) hours.

Excavation in Rock, Intermediate and Soft material

For the purpose of this Contract excavated material shall be divided into 3 (three) classifications as follows:

[redacted]

(a) "Hard Rock" - will be held to be solid rock and boulders exceeding 0,20 cubic metres in volume, the excavation of which, in the opinion of the Employer's Agent, necessitates the use of explosives.

(b) "Intermediate" - will be held to be all material other than rock, the excavation of which in the opinion of the Employer's Agent, warrants or necessitates the use of machines such as paving breakers, back-actor, trenchers etc. and is not freely pickable by hand.

(c) "Soft" - will be held to be all material other than rock or intermediate material which is removable by "ditch width" excavations classified as soft.

The Contractor shall immediately notify the Employer's Agent if he encounters material which he considers should be classified as rock or intermediate and shall not proceed with the excavation thereof until the Employer's Agent has given a ruling on the classification of the material and until the necessary measurements to compute the quantity of rock or intermediate material to be excavated have been made and agreed upon.

Any material excavated before the inspection and not measured by the Employer's Agent shall not be classified as rock or intermediate material.

Where rock is interspersed with other material making accurate measurements thereof impractical the Employer's Agent shall access the proportion of rock in the material to be excavated in consultation with the Contractor.

The Employer's Agents ruling on the classification of the material and his assessment of the proportion of the rock or intermediate shall be final.

Maintenance

The Contractor shall be responsible for making good all defects which may arise for a period of twelve months from the date of completion or handing over to the Employer's Agent. Should any subsidence occur subsequently of the replaced asphalt premix surfacing or other surfaces where the Contractor has excavated, the making good shall be done at the Contractor's expense.

TF 1.2 REINSTATEMENT OF INTERLOCKING BLOCKS: PAVING SLABS, BRICKS AND SLABS

Re-instatement of Interlocking Blocks

Footways consisting of interlocking blocks, paving slabs or bricks shall be reinstated by the Contractor. Wherever possible, the existing blocks, slabs or bricks shall be cleaned and re-used. Prior to final reinstatement, blocks, slabs or bricks which have been taken up shall be stacked in a safe manner without restriction to vehicular or pedestrian traffic. Blocks, slabs or bricks around valve boxes shall be finished to the correct line and slope of the surrounding surface.

Where filler spaces are left between the paving blocks and boxes, these spaces must be filled with a 1:3 mixture of cement-sand and finished with a wooden float. The filler spaces shall not be greater than 50% of the paving block. If the space is greater, then a paving block must be cut to fit.

Additional interlocking blocks, paving slabs or bricks required to complete the reinstatement, over and above those taken up and stacked shall be supplied by the Contractor on instruction from the Employer's Agent.

If additional blocks, slabs or bricks are necessary as a result of the Contractor not having exercised due care in the recovery of blocks, slabs or bricks the cost of such additional blocks, slabs or bricks shall be for the Contractor's account.

Re-instatement of Various Surfaces

The Contractor will be responsible for the reinstatement of the following surfaces, and no payment will be made for the following type of surfaces:
a) Soil - No extra payment

Re-instatement of Kerbing

Where kerbing has been removed, it shall be cleaned and stacked in a safe manner without restriction to vehicular or pedestrian traffic. The Contractor shall replace the kerbing to line and level. Payment will be per measured linear meter which will include for the removal, cleaning, relaying and any incidentals to complete the work.

[redacted]

TF 1.3 CONTRACTORS RESPONSIBILTY TO CONSUMERS

Consumer Complaints

The Contractor shall not be required to carry out any plumbing work within a private property unless instructed by the Employer's Agent. Under these latter circumstances, the Contractor shall be compensated on a day work basis for any work done.

Advance Warning to Consumers

The Contractor shall give all consumers affected at least 24 hours notice in writing of his proposals on an official letter from the Employer in regard to every planned interruption of the municipal services necessary for the execution of his work. Failure to do so could result in the suspension of work for a period as determined by the Employer's Agent.

Work in Servitudes

The Contractor shall give 7 days' advance notice to both the Employer's Agent and the property owner of his intention to commence work in a servitude. The Contractor shall not permit his workmen and labourers to use the servitude as a temporary right-of-way and shall carry out the work expeditiously and with the minimum inconvenience to the occupiers and owners of adjacent properties.

The Contractor shall take all necessary precautions for the protection of persons, livestock, buildings, services and property.

The top soil shall be kept segregated and all gardens, fences, paths, etc. shall be reinstated to their former conditions.

No extra payment will be made to the Contractor should it become necessary to omit sections and return to them later. It is not intended, however, that the Contractor should be called upon to return to the site after all the other sections have been completed and the Contractor has removed his plant and equipment.

Trees removed in servitudes shall remain the property of the stand owners if required by them.

[redacted]

PS-TG HDPE PIPES FOR HORIZONTAL DRILLING

PS-TG 1 Scope

Horizontal drilling is a trenchless technique for installing a sleeve or pipeline underneath roads, pavement or other above ground obstructions to prevent damage to the upper surfaces.

PS-TG 2 Materials

The raw material to be used in the manufacture of the HDPE pipe shall be a minimum PE100 SABS ISO 4427 pipe. Class PN10 PE100 HDPE is required for sewer mains.

All pipes used in construction must bear marking indicating compliance with SABS ISO 4427.

Pipes with diameters of 100mm or greater must be supplied in straight lengths and not in coils. This shall be done to prevent pipes curling, resulting in improper welding of pipes.

The Contractor shall be responsible for securing construction materials, the cost of which shall be included in the tendered rates. Effective administration measures for taking delivery of material and controlling usage and wastage shall form part of the responsibility of the Contractor, the cost of which shall be included in the rates tendered.

PS-TG 3 Storing and Handling

All HDPE pipes and fittings shall be securely stored in areas to the Employer's Agent approval.

Every precaution shall be taken in the handling of the HDPE pipe and fittings. Scratching of the outer surface may result in the Employer's Agent rejecting them for use in the works. Special precaution must be taken when transporting the HDPE pipe from the site where it is welded to the point where it is to be launched into the existing main. Pipes shall not be dragged along the ground as this will result in scratches on the outer surface of the pipe which could result in the failure of electrofusion fittings welded to the pipe.

PS-TG 4 Plant and Equipment

Plant, equipment and tools to be used by the Contractor in the execution of work shall be of good quality, sound design and modern manufacture. Plant and equipment must be suitable for its required purpose, must be of the proper type to ensure that work is carried out efficiently and to the required standards and must be maintained in a state of efficiency to the satisfaction of the Employer's Agent.

The equipment shall be accurate and be able to operate in varying soil conditions.

The Contractor shall also provide a certificate of calibration for the welding machine to be used. The certificate shall bear the model number of the welding machine, the name and address of the certifying agent, the date of the test and a statement as to the accuracy of the temperature and pressure gauges on the machine in question. A certificate of calibration should be dated no earlier than 30 days prior to the day on which the Contractor is to commence work. The cost of the test must be included in the rates submitted.

Transportation to and from site, maintenance, fuel and lubrication of the plant shall be the responsibility of the Contractor.

The tender price submitted for the work to be executed must include the cost of establishment, furnishing of all materials, plant, plant operations and equipment necessary to do the work during the period of the contract.

PS-TG 5 Construction Method

PS-TG 5.1 Welding of the HDPE pipe

It may be required that the HDPE pipe be welded in a continuous length on site. The welding of the HDPE pipes must be done by a registered welder. The HDPE pipes shall be supplied in straight lengths, and not in coils, to avoid the pipe ends from curling and thus hindering the welding process. To reduce the number of welds necessary, pipes should be supplied in the maximum straight lengths available.

The HDPE pipe shall be joined by means of heat fusion using approved butt welding equipment by fully trained operators in accordance with SANS 0268-1 and the pipe manufacturer's specifications. The Contractor shall advise the Employer's Agent of the welding machine and of the welding parameters and tables to be used. Test welds shall be carried out and shall be tested and approve[redacted]he Employer's Agent before welding on site can commence.

[redacted]

Once welding of a joint has been completed and allowed to cool then the external bead shall be removed by an approved means to produce a smooth outer diameter necessary to prevent any snagging during the drilling process. Additionally, the internal bead shall be removed using an approved bead removal tool. The beads are to be placed in a transparent plastic bag with the joint number marked on the bag for inspection by the Employer's Agent.

Each joint shall be carefully examined for cleanliness and uniformity to ensure that the welded joint is capable of withstanding the tensile forces exerted on the joint during the drilling process. All joints shall be watertight. The width of the bead removed must be within the specified limits. The bead should be twisted at several positions. Should the bead split at any point, the joint from which the bead was removed, must be cut out and redone. If similar defects occur, no further welding should be done till the equipment is examined and approved.

The contractor shall provide a digital thermometer or similar for the accurate measurement of the weld temperatures.

No separate payment shall be made for the welding of pipes and for the removal of internal and external beading.

PS-TG 5.2 Launching and receiving trenches

The spacing of these launching and receiving excavations shall be dictated by the location of manholes, water valves, hydrants, house connections, etc.

The position of each launching and receiving excavations shall be sited so as not to interfere with vehicular and pedestrian access either in the roadway or to properties. Disruption to the normal activities which occur in the area surrounding the works shall be kept to a minimum.

The excavation of the launching and receiving trenches shall be measured as a normal excavation. The rate supplied for excavations shall therefore take this into account.

PS-TG 5.3 Installation of the HDPE pipe

The HDPE pipe shall be continuous through the sections where it may have been cut due to the length required for the process e.g. in the launching and receiving trenches.

The connections to the existing or new manhole shall only be done when the HDD process has been completed and the residual stresses have dissipated and the pipe has assumed its final position.

The finished pipeline shall be free from defects such as foreign inclusions or pinholes. The pipeline shall be totally watertight and free of any leakage into or from the pipe.

Any latent defects which will affect the integrity and strength if the new pipeline shall be repaired at the Contractor's expense in a manner to be mutually agreed to by the Employer's Agent and the Contractor.

The Contractor shall advise the Employer's Agent timeously of the installation of the HDPE pipe so that his representative can be present during the process.

PS-TG 5.4 Connection to Manholes

On completion of the HDD operations the HDPE pipe is to be trimmed leaving approximately 25mm exposed into the manhole at the entry or exit walls. This should be done once residual stresses in the pipe have been dissipated and the pipe has assumed its final position.

The pipe ends are to be sealed with a single PVC socket treated on the outside with solvent cement and sand. The PVC sockets must be grouted into the manhole walls. The manhole benching must be scabbled and shaped to match the pipe diameters.

All mortar shall consist of Ordinary Portland Cement (OPC) and dolomite aggregate. For connections to an existing manhole, any consequential damage to the existing brickwork or structure, including covers and frames, shall be repaired by the Contractor to the Employers Agent's approval at the Contractor's expense.

PS-TG 6 Testing

All new sewer infrastructure, including new laterals, must be pressure tested according to the specified testing pressure as per SANS 1200 LD.

The above test procedure will be measured per test carried out and the unit rate tendered for each shall include the supply of water, materials, plant, labour and equipment required to undertake required testing.

[redacted]

The Contractor shall make allowance in his rates for the supply of any equipment necessary to allow for the air testing of the continuously welded HDPE prior to installation, as well as for the inspection of pressurised water mains once it has installed.

PS-TG 7 Acceptance

After the line has been installed and cleaned a CCTV camera inspection shall be made in the presence of the Engineer and the recording/ CCTV footage and the log thereof shall be handed to the Employer's Agent.

PS-TG 8 MEASUREMENT AND PAYMENT

PS-TG 8.1 Installation according to Pipe Size ..... Unit: m

The rate tendered must include full compensation for all costs of drilling the pipe, supply and installing the new pipe, testing, safety measures, all supervision, labour, materials, transport, equipment and incidentals required.

PS-TG 8.2 Manhole Chamber Tie-ins

1) Tie HDPE Sewer Main into new manhole chamber

a)	160mm diameter	Unit: No
b)	200mm diameter	Unit: No
c)	250mm diameter	Unit: No
d)	315mm diameter	Unit: No
e)	355mm diameter	Unit: No
f)	400mm diameter	Unit: No

The unit of measurement shall be the number of connections of the new sewer into new manholes indicated on the relevant drawings.

The rate per connection shall include full compensation for all necessary material, labour, plant and tools required to connect into the new sewer manhole.

2) Tie HDPE Sewer Main into existing manhole chamber

a)	160mm diameter	Unit: No
b)	200mm diameter	Unit: No
c)	250mm diameter	Unit: No
d)	315mm diameter	Unit: No
e)	355mm diameter	Unit: No
f)	400mm diameter	Unit: No

The unit of measurement shall be the number of connections of the new sewer into existing live manholes indicated on the relevant drawings.

The rate per connection shall include full compensation for all necessary material, labour, plant and tools required to excavate and expose the existing manhole, which the new sewer is to connect into and for all additional excavations which may be required to satisfactorily complete the connection to break into the existing sewer manhole and connect the new sewer, make good any damage caused during the breaking in process and deal with the flow in the existing sewer.

The rate shall also include the provision and reconstruction of the channel in the existing manhole, including all benching, etc, the taking of all necessary preventative and precautionary measures whilst making the connection, blocking off the ends of any sewer pipe which is to be abandoned and to liaise with and abide by the requirements, if any, of the Employer before and during construction of the connection.

[redacted]

PS-TH SLIPLINING

PS-TH 1 Scope

This specification covers the insertion, by sliplining, of continuous liner pipes into existing pipelines with minimal disturbance of the surface, traffic disruption or interruption of service.

The liner pipe is normally pulled into the existing pipeline by cable and winch and the resultant annulus between the host pipeline and the liner pipe is usually filled with grout.

PS-TH 2 Materials

LINER PIPE

The liner pipes for sliplining shall:

a) be High Density Polyethylene (HDPE), complying with the requirements of SANS 4427.

b) be butt welded into continuous lengths in accordance with the pipe manufacturer's recommendations and SANS 10268-1.

c) have the internal and external welding beads removed without leaving notches.

d) be able to withstand without damage the longitudinal force to be transmitted by winching (and/or pushing) equipment.

GROUT

The cementitious grout shall:

a) be a low strength annulus filler

b) be of suitable low viscosity to fill the annulus between the host pipeline and the liner pipe, under gravity or minimal pressure.

c) contain only cement, potable water, and possibly additives such as fly ash, silica fume, chemical dispersants or thixotropic agents to enhance flowability, control set time and reduce segregation.

d) contain cement that shall comply with the requirements of SANS 50197-1.

PS-TH 3 Construction

General

1. The liner pipe is usually pulled into the host pipeline using a cable and winch. However the liner pipe can be inserted by pushing with an excavator bucket and a choker strap. In certain circumstances it may be advantageous to use both methods in combination.

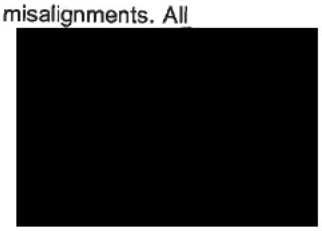
2. Cables and winches (and/or pushing equipment) shall be suitable for the particular sliplining operation and shall have sufficient pulling (and/or pushing) capacity. Pulleys and any associated framework installed in the winching points shall be capable of withstanding the substantial forces required. Winches shall be equipped with load gauges and controls to avoid overloading and should be of the capstan type to avoid cable damage and have an immediate stopping facility.

3. The pulling head shall be suitable for attaching to the liner pipe securely. It shall be capable of withstanding the winching forces and guiding the liner pipe into and through the host pipeline. It shall have a rotating eye to avoid the liner pipe twisting the cable. Once the liner pipe has been installed, the pulling head shall be capable of being removed from the host pipeline.

Preliminary

1. The internal diameters and lengths of the existing pipelines to be lined shall be measured and verified on site prior to the liner pipe being ordered.

2. The pipelines to be lined shall be inspected by CCTV to identify any obstructions, protruding connections, defects, infiltration, ovality and any joint offsets, separations and misalignments. All connections onto the existing pipeline shall be measured and noted.



3. The pipelines shall be cleared of any obstructions including silt, debris, roots, foreign objects or encrustations.

4. Any necessary point repairs shall be made to the existing pipeline.

PS-TH 4 GENERAL PREPARATION

All insertion pits and winching points shall be of suitable size to accommodate the necessary sliplining operations and equipment.

There shall be a contingency plan to remove the liner pipe in the event that it cannot be completely inserted due to unforeseen problems. This should include a means of pulling the liner pipe back out of the host pipeline and a means of cutting the liner pipe off in the insertion pit should it jam in the host pipeline.

PS-TH 4.1 EXISTING PIPELINE

To ensure the bore of the existing pipeline is of adequate size to accommodate the liner pipe, any excessive hard deposits on the pipe walls shall be removed using a pipe scraper, cutter, borer or pig to ream the pipeline.

The pulling head with a section of liner pipe of length at least twice the liner pipe diameter or a proving ring shall be pulled through the pipeline to demonstrate that the liner pipe can negotiate the host pipeline. Cables shall be attached to both ends to allow it to be retrieved should it be obstructed.

The existing pipeline shall be given a final clean immediately prior to lining to remove any remaining silt or debris.

The pipeline shall be inspected by CCTV camera to confirm all debris and silt has been removed.

PS-TH 4.2 SLIPLINING

Care shall be exercised to avoid overstressing the liner pipe. The maximum allowable winching forces shall be calculated for the liner pipe (limited by the cross-sectional area and maximum safe permissible short term tensile stress of the liner pipe material). The winch load gauge shall be monitored during the winching process.

The whole length of liner pipe shall be continuously supported on rollers to minimise friction and avoid damaging the liner pipe. It may be necessary to put guards over the edges of the existing pipe to prevent gouging of the liner pipe during insertion. The liner pipe shall be winched through in one continuous operation.

A lubricant may be used to reduce friction between the liner pipe and the host pipeline during installation. The lubricant shall be a nontoxic, oil-based product that has no detrimental effect on the liner pipe or host pipeline, does not support bacterial growth or affect the general characteristics of the flow.

Allowance should be made for the liner pipe stretching during insertion then shortening after completion of the installation. A 24 hour relaxation period should be allowed.

PS-TH 4.3 GROUTING THE ANNULUS

If ordered by the employer's agent the annulus between the liner pipe and the host pipeline shall be grouted up. The grout shall be mixed in a paddle, high shear or colloidal grout mixer to a homogenous consistency.

The grout shall be delivered to the injection point at a steady pressure with a suitable grout pump at the mixing tank and suitable grout hoses. The distance the grout travels, whether in the hose or the annulus, should not exceed 100 m. All grout should be used within one hour of being mixed. Means of accurately measuring grout component quantities, pumping pressures and volumes shall be provided. Pressure gauges shall be provided at the grout pump and at the injection point. The pressure gauges shall be equipped with diaphragm seals and shall have a working range between 1,5 and 2,0 times the planned grout pressure with an accuracy of no more than 2% error.

The grout mixture and installation procedures shall be such that the annulus is completely filled. Adequate grouting points shall be used to ensure this. The calculated volume of the annulus and the actual volume of grout used shall be monitored. Should the volume of grout being used exceed the estimated volume, this would be an indication that grout is penetrating through the existing host pipeline and into surrounding cavities.

[redacted]

Precautions shall be made to prevent the liner pipe from floating when grouting. To prevent floating the liner pipe should be held down or filled with water and the grouting should take place in stages. Flotation forces may not only float the liner pipe in the host pipeline but may cause the liner pipe to deform or buckle.

PS-TH 5 SERVICE CONNECTIONS

After the liner pipe has been installed the existing connections shall be re-established through the liner pipe.

PS-TG 6 TESTING

All new sewer infrastructure, including new laterals, must be pressure tested according to the specified testing pressure as per SANS 1200 LD.

The above test procedure will be measured per test carried out and the unit rate tendered for each test shall include the supply of water, materials, plant, labour and equipment required to undertake the required testing.

The Contractor shall make allowance in his rates for the supply of any equipment necessary to allow for the air testing of the continuously welded HDPE prior to installation, as well as for the inspection of pressurised water mains once it has installed.

PS-TG 7 ACCEPTANCE

After the line has been installed and cleaned a CCTV camera inspection shall be made in the presence of the Engineer and the recording/ CCTV footage and the log thereof shall be handed to the Employer's Agent.

PS-TH 8 MEASUREMENT AND PAYMENT

PS-TH 8.1 INSTALLATION AND SLIPLINING OF SOLID WALL HIGH DENSITY POLYETHYLENE (HDPE) LINER PIPES

Installation and sliplining of pipes Unit: m

The price tendered and paid shall include full compensation for the cost of installing the liner, butt welding, testing of welds, pipe fittings, joints and couplings, liner pipe supports, final cleaning of pipelines, CCTV inspections, testing, safety measures, all supervision, labour, materials, transport, equipment and incidentals required to reline the host pipeline.

PS-TH 8.2 GROUTING OF ANNULUS

Grouting of annulus Unit: m^3

Grouting the annulus shall be measured and paid for separately.

The price tendered and paid shall include full compensation for mixing and pumping of materials, testing, safety measures, all supervision, labour, materials, transport, equipment and incidentals required to grout the annular space between the liner pipe and the host pipeline including any grout that penetrates through the host pipeline and fills any surrounding cavities.

[redacted]

ACCOMMODATION OF TRAFFIC SPECIFICATIONS

This part of the Works Specifications contains specifications for Accommodation of Traffic not covered by the Standard Specifications.

The number of each clause and each payment item in this part of the Works Specification is prefixed with an E to differentiate these clauses and items.

The following specifications are covered under this part of the Works Specifications:

AMENDMENTS TO SECTION 1500: ACCOMMODATION OF TRAFFIC

SECTION E1500 : ACCOMMODATION OF TRAFFIC

E 1502 GENERAL REQUIREMENTS

(a) Safety

The following shall be added to Clause 1502(a) of the Specifications:

All construction workers shall wear high visibility safety clothing when working alongside public traffic. The safety jackets shall be of an approved Level 2 type, bright/fluorescent orange, red-orange or yellow in colour with retro-reflective strips as indicated in Chapter 13 of Volume 2 of the South African Road Traffic Signs Manual (SARTSM). When work is carried out between the hours of sunset and sunrise, the Level 2 safety jackets shall be replaced by level 3 jackets.

(i) Traffic safety officer

Add the following to sub-sub clause (iii):

Should a Traffic Safety Officer be required for the "Works Project", the officer shall patrol and inspect the reference and location of each temporary traffic-control facility on the whole site of works twice each day, to record all irregularities discovered and the remedial action taken, and to sign off as correct for submission to the Employer's Agent on the date / reference / location record sheets. The traffic safety officer shall keep a duplicate book for this specific purpose.
The traffic safety officer shall submit to the Employer's Agent by 10h00 each morning, a record of all matters pertinent to site safety and traffic accommodation throughout the site of works the previous day. He shall also record the daily labour returns of flagmen, stop/go and traffic signal control staff employed.

Add the following:

The Contractor shall provide the traffic safety officer with the necessary resources, inter alia a light delivery vehicle (LDV), a cellular telephone, warning signs and rotating amber flashing warning lights and at least two (2) personnel. The LDV shall be equipped with high visibility front and rear panels. The legend CONTRACTOR'S TRAFFIC CONTROL in visible fluorescent and/or retro-reflective materials of letter height of at least 175 mm shall be displayed prominently on front and rear sign panels on the LDV. The LDV shall be equipped with a rotating amber flashing warning light with a minimum intensity of 100W. The warning light shall be switched on at all times and the front and rear sign panels shall be displayed when the LDV is used on the site. The traffic safety officer, his vehicle, equipment and personnel shall also be available 24 hours per day on all non-working days/hours.

During non-working days or periods, the Contractor's traffic safety officer will be required to patrol and ensure that all temporary traffic-control facilities are in place and functional. The accommodation of traffic team will be required to be on standby.

The provision for the traffic safety officer, his vehicle, equipment, the cost of his cellular telephone and personnel resources shall be deemed to be included in the rate tendered for Item E15.15.

Add the following new sub clauses to Clause 1502:

(j) Traffic diversions

Add the following:

The Contractor's attention is drawn to the heavy volume and speed of traffic carried on the affected roads and shall make due allowance therefor in his construction programme.

Traffic accommodation shall be carried out in strict accordance with the requirements of the South African Road Traffic Signs Manual (SARTSM) – Volume 2 – Chapter 13: Roadworks Signing (June 1999). The method of accommodating traffic shall be in accordance with the layouts of the traf[redacted]trol [redacted]

facilities for the traffic diversions on the respective roads as shown in the South African Road Traffic Signs Manual (SARTSM) - Volume 2 Chapter 13, on the drawings or as directed by the Employer's Agent.

The Contractor shall submit a drawing showing details concerning each traffic diversion to the Employer's Agent for approval at least 7 days prior to the scheduled commissioning of such diversions to allow him sufficient time to inform and obtain the approval of the traffic officials of the relevant authorities concerned for such diversions.

(k) Parking of construction vehicles and plant

Where there is no working space off the road, construction vehicles may be parked on the shoulder only during working hours in which case flagmen and traffic cones shall be utilised to warn public traffic of the hazard. During non-working hours all obstructions to traffic shall be removed from the road.

The parking of construction plant within the road reserve outside working hours will be permitted. The minimum clearance between the parked vehicles / plant and the edge of any carriageway shoulder shall be 5 metres.

(l) Staging of construction

The work in this Contract may necessitate traffic having to be deviated onto a reduced -width carriageway and chanellised into traffic lanes routed past / through the construction work areas.

Traffic shall be accommodated on the existing surfaced carriageway and shoulders. Temporary deviations are required at certain on-ramps under this contract. Accommodation of traffic will generally be carried out by closing off one lane of traffic at a time and accommodating the traffic on the other lane(s), or in the case of the two-lane carriageway sections, partly onto the temporary-surfaced shoulder.

Temporary closure or occupation of traffic lanes will only be permitted as specified and the Contractor shall ensure that all traffic control facilities no longer applicable to the situation are removed or effectively covered.

Amber flashing warning lights shall be placed on traffic lane deviations at night and when instructed by the Employer's Agent to warn motorists of lane closures and occupation of lanes for work operation areas.

It is a condition of this contract that the Contractor shall programme and arrange for adequate accommodation of traffic within the following operational limitations:

(i) Individual work areas shall be clearly demarcated with traffic signs and delineators / cones as specified. No individual working area shall exceed 1 000 metres in length.

(ii) Only one lane per carriageway may be closed to traffic at a time. A lane may be closed to traffic on two-lane carriageway sections with permission of the Employer's Agent. All lanes must be open to traffic at the following times:

- AM Peak: Monday to Friday inclusive: 06:00 to 09:00.
- PM Peak: Monday to Friday inclusive: 16:00 to 18:30.

There are no lane closure time restrictions over weekends.

(iii) Closure of a single traffic lane or partial lane will only be permitted during non-peak time periods. A minimum trafficable width of 2 x 3,0 m lanes on 2 and 3 traffic lane carriageways and 1 x 3,2 m on the ramps shall be maintained.

(iv) Crossing of the median of dual carriageway roads by Contractor's plant or vehicles shall not be permitted.

(v) Signage which does not apply during construction shall be removed or effectively covered.

(vi) Signage erected for traffic accommodation purposes which is not applicable (e.g. speed limits at weekends etc) shall be effectively covered.

(vii) Signs traffic accommodation devices for closures shall always be placed furthest away from the work area first and then by working inwards in the direction of traffic.

(viii) On completion of the work remove delineators/cones/signs by starting at the work area and work outwards against the flow of traffic.

(ix) Before re-opening a lane to traffic after milling/surfacing operations, temporary road marking as specified shall be applied.

[redacted]

Any costs related to these construction limitations and restrictions will be deemed to be covered in scheduled rates.

Whenever possible, the Contractor shall ensure that the full road width or carriageway shall be open at night and all signs no longer applicable to the situation removed or effectively covered. If the road or carriageway is not in a safe trafficable condition over the full width at the end of each day's work, the Contractor shall provide adequate flagmen, signs, barriers, lights and necessary personnel / staff to ensure a reasonable free flow of traffic on the specified traffic lanes throughout the night and the whole period that the roadway is open to traffic.

(m) Failure to Comply with the Provisions for the Accommodation of Traffic

Failure or refusal on the part of the Contractor to take the necessary steps to ensure the safety and convenience of the public traffic, accommodation of traffic, plant and personnel in accordance with these specifications or as required by statutory authorities or ordered by the Employer's Agent, shall be sufficient cause for the Employer's Agent to deduct penalties as follows:

A fixed penalty of R500,00 per occurrence shall be deducted for each and every occurrence of non-compliance with any of the requirements of Section 1500 of C3.4 Construction: Accommodation of Traffic Specifications.

In addition a time-related penalty of R500,00 per day or part thereof over and above the fixed penalty shall be deducted for non-compliance to rectify any defects in the accommodation of traffic within the allowable time after an instruction to this effect has been given by the Employer's Agent. The Employer's Agent's instruction shall state the allowable time, which shall be the time in hours for reinstatement of the defects. Should the Contractor fail to adhere to this instruction, the time-related penalty shall be applied from the time the instruction was given.

The failure of or refusal by the Contractor to construct and/or maintain diversions, barricades, traffic signs or road markings at the proper time, or to take the necessary precautions for the safety and convenience of public traffic as specified or instructed by the Employer's Agent, shall be sufficient cause to suspend the Works until the required construction or maintenance has been completed to the satisfaction of the Employer's Agent.

E 1503 TEMPORARY TRAFFIC CONTROL FACILITIES

Add the following:

The layouts expected to be most commonly used in the contract are shown on the drawings of the South African Road Traffic Signs Manual (SARTSM) Volume 2 Chapter 13: Roadworks Signing (June 1999).The details shown for spacing and placement of traffic-control facilities may however, be revised at the discretion of the Employer's Agent where deemed necessary to accommodate local site geometry and traffic conditions.

(a) Traffic-control devices

The following shall be added to Clause 1503(a) of the Specifications:

Flagmen shall be provided at all access and exit points to the working areas alongside public traffic. Flagmen equipped with high visibility safety jackets, red flags, STOP/GO-RY signs and two-way radios shall be stationed at each end of the road section to ensure an orderly flow of traffic past the work area. All signals must be clear and the flagmen shall be intelligent and responsible personnel. In areas of high traffic density, the assistance of the relevant traffic authorities officials shall be solicited.

(b) Road signs and barricades

Add the following:

All temporary barricades and delineators shall be mounted on portable supports to facilitate their moving. Only sandbags will be permitted for the ballasting of the supports. The sandbags shall consist of durable material and have adequate mass to prevent signs from being blown over by the wind. Sandbags shall be placed as ballast on the supports in front of and behind the sign so as not to obstruct the traffic path past the sign. The cost of the sandbags shall be included in the tendered rates for the various types of temporary road signs.

All temporary road traffic signs shall, where possible, be mounted on poles planted outside the surfaced shoulders.

(c) Channelisation devices and barricades

Add the following:

Traffic channelisation shall be carried out by means of plastic type delineators (Sign TW401 / TW402) in accordance with SANS 1555. The sign face shall be 200 mm x 800 mm in size and shall be mounted on suitable non-metal bases. Each base shall be suitably ballasted with sandbags.

Traffic cones manufactured in a fluorescent red-orange or red plastic material may be used only for roadmarking operations and other short-term lane deviations during daylight. Cones used on deviations shall be 750 mm high on the freeways and 450 mm high on other roads with suitable heavy bases to prevent the cones from being blown over by wind or turbulence from moving traffic.

Lane closures or traffic diversions that continue into nighttime shall be demarcated by delineators.

Traffic cones and delineators shall be placed at maximum intervals of 10 m on tapers and 20 m on straights unless otherwise authorised by the Employer's Agent.

(e) Warning devices

Add the following after the first paragraph:

At night and when directed by the Employer's Agent, amber flashing warning lights shall be placed at strategic places such as barricades, obstructions, etc. The warning lights shall be "Vama SA" amber flashing lights or a similar approved type.

All vehicles and items of mobile plant working on the Site shall be supplied with warning boards and rotating amber flashing lights of robust construction as described in Section 3.1.4 of Part 3 of the South African Road Traffic Signs Manual. The amber lens shall have a minimum height of 200 mm and the beacons shall be of the revolving parabolic reflector mountable type for all construction vehicles and clearly visible to approaching traffic from all directions.

The Contractor shall supply and maintain similar rotating amber flashing lights with a magnetic base, flexible cable and connection suitable for insertion into a standard 12V automobile cigarette lighter socket for the Employer's Agent and his staff.

Rotating amber flashing lights on the Contractor's plant and vehicles shall not be paid for separately but shall be included in the rates covering the use of such plant and vehicles.

The provision and maintenance of rotating amber flashing lights for the use of the Employer's Agent and his staff shall be paid under Item E15.14.

Add the following new sub clauses:

(h) Maintenance

All temporary traffic control facilities shall be kept clean and maintained in good order at all times.
If the coefficient of retro-reflection of any of the Contractor's signs falls below 80% of the value given in Table 1 of CKS 191 - 1987 (observation angle 0,33 , entrance angle 5,0) for the grade and colour of the material used, the sign shall be considered defective and shall either be rectified or removed and replaced.

(i) Sufficiency

The Contractor shall determine from his proposed programme, the number of sets of temporary signposts required and shall not commence erecting the signs before all the signs have been delivered to the site.

The Contractor shall replace damaged or missing items within a period of two (2) hours of the deficiency being discovered.

The Contractor shall allow for the replacement of at least five (5) percent of the traffic-control facilities scheduled in his tendered rates. If the tenderer envisages a greater or lesser percentage replacement, this must be stated in his covering letter and a revised schedule of barricades, signs and delineators shall be submitted as an alternative tender with his tender. This percentage replacement is only for traffic-control facilities damaged by the public traffic and/or if their ineffectual performance is beyond the Contractor's control and not the result of his actions or omissions.

E1505 TEMPORARY DRAINAGE WORKS

Add the following:

[redacted]

Within any individual working area, the Contractor shall make adequate provision for drainage where water can pond or be contained against a difference in depth of roadway. No separate payment will be made for the provision and use of standby pumps and dewatering equipment or cutting of drainage slot and/or channels to effectively drain the roadway surface."

The Employer's Agent may instruct the Contractor to carry out additional drainage work in the interest of safety of the travelling public. The Contractor shall make due allowance for all such drainage in the tendered rates.

E 1517 MEASUREMENT AND PAYMENT

Item 15.01 Accommodating traffic and maintaining temporary deviations

Delete Item 15.01 and replace with the following:

Item		Unit
E 15.01	**Accommodation of traffic and maintaining temporary deviations**	
(a)	Traffic accommodated - Short Term works	(kilometer) km
(b)	Urban Streets – Two-way lane closure	km
(c)	Urban Streets – One-way traffic accommodated	km
(d)	Urban Streets – Lane closure in and beyond junction	km

Delete the first sentence of the first paragraph and replace with:

"The unit of measurement shall be the kilometre, measured once along the centre-line of the road carriageway, of temporary deviations, existing roads used as temporary deviations and roads constructed, rehabilitated and/or resurfaced in half-widths. The kilometre length shall include the roadway along which traffic delineators / cones are placed for traffic accommodation (includes the transition area, the buffer zone, work area and termination area, but excludes the advance warning area). In the case of a dual carriageway, each separate road carriageway shall be measured."

Delete the second paragraph and replace with the following:

The tendered rate shall include full compensation for accommodating traffic during the different specific construction operation(s) or work phases included in the contract. The tendered rate shall also include full compensation for the provision of communications equipment required for regulating the traffic, arranging for the moving of services and facilities, solving traffic problems, complying with the legal requirements of all authorities concerned, for providing temporary access to private property, and for the provision and maintenance of temporary drainage.

The tendered rates sum shall include full compensation for the relocation of traffic-control facilities including dismantling, storing if necessary, transporting, re-erecting and inspecting the traffic-control facilities, and for all labour, equipment, constructional plant and incidentals as specified or shown on the drawings.

The tendered rate shall also include full compensation for the specified general requirements and all incidental items of cost which are required under the provisions of Section 1500 and are not specifically paid for under the other pay items provided in Section 1500.

The rate shall also include for the sign stand, for the provision of two sand bags per delineator to hold it in position and for their replacement when necessary.

The tendered rate shall also include full compensation for the provision of a full-time traffic safety officer and for all the duties performed by him.

[redacted]

3.4.3 WAYLEAVES, PERMISSIONS AND PERMITS

The Contractor shall be responsible for obtaining all of the necessary wayleaves, permissions or permits applicable to working near any existing services or other infrastructure on Site, and shall ensure that any wayleaves, permissions or permits obtained by the Employer's Agent prior to the award of the contract are transferred into the Contractor's name.

The Contractor shall abide by any conditions imposed by such wayleaves, permissions or permits.

The Contractor shall ensure that all wayleaves, permissions and permits are kept on site and are available for inspection by the relevant service authorities on demand.

The Contractor shall also ensure that any wayleaves in respect of electricity services are renewed timeously every three months.

3.4.4 LOCAL PRODUCTION AND CONTENT

The Contractor will be required to comply with all requirements as stated in this document.

3.4.5 EMPLOYMENT OF SECURITY PERSONNEL

All security staff employed by the contractor on behalf of the CCT or at any CCT property must be registered with Private Security Industry Regulatory Authority (PSiRA). Proof of such registration must be made available to the employer's agent upon request.

3.4.6 UNIVERSAL ACCESS

In pursuit of becoming a fully accessible city, the City of Cape Town expects all Consultants and Service Providers to design and construct to SANS Standards for accessible Design, and any relevant City of Cape Town documents as may be relevant, and to exhibit a commitment to employing Universal Design Principles in their design, construction, service and product delivery of construction projects. This applies to all projects whether new, temporary, upgrades or rehabilitation works.

The contractor will engage with project representatives and the CCT's Universal Accessibility Department on how Universal Design Principles will enhance accessibility, within this project, that meets a variety of needs and creates a city that is accessible to everyone.

[redacted]

C3.5 Management

CONTENTS

3.5.1. FORMS FOR CONTRACT ADMINISTRATION
3.5.2 PARTICIPATION OF TARGETED LABOUR
3.5.3. COMMUNITY LIAISON OFFICER
3.5.4. PARTICIPATION OF TARGETED ENTERPRISES
3.5.5. ENVIRONMENTAL MANAGEMENT PROGRAMME
3.5.6. HEALTH AND SAFETY

3.5.1 FORMS FOR CONTRACT ADMINISTRATION

The Contractor shall complete, sign and submit with each monthly statement for payment in respect of each Works Project contract, the following updated returns (the format of which are attached in C3.6 Annexes):

a) Monthly Project Labour Report (Annex 1)
b) B-BBEE Sub-Contract Expenditure Report (Annex 2)
c) Joint Venture Expenditure Report (Annex 3)
d) Targeted Labour Contract Participation Expenditure Report (Annex 4)
e) Targeted Enterprises Contract Participation Expenditure Report (Annex 5)

The Monthly Project Labour Report must include details of <u>all</u> labour (including that of sub-contractors) that are South African citizens earning less than R450.00 per day, as adjusted from time to time (excluding any benefits), who are employed on a temporary or contract basis on this contract in the month in question.

In addition to the Monthly Project Labour Report the Contractor shall simultaneously furnish the Employer's Agent with copies of the signed employment contracts entered into with such labour, together with certified copies of identification documents, proof of attendance in the form of attendance register or timesheets, as well as evidence of payments to such labour in the form of copies of payslips or payroll runs. If the worker is paid in cash or by cheque, this information must be recorded on the envelope and the worker must acknowledge receipt of payment by signing for it and proof of such acknowledgement shall be furnished to the Employer's Agent.

The Monthly Project Labour Reports shall be completed and submitted in accordance with the instructions therein and copies of all submitted documents must be kept on site be made available to the employer's agent upon request.

The **B-BBEE Sub-Contract Expenditure Report** is required for monitoring the prime contactor's compliance with the sub-contracting conditions of the **Preference Schedule**.

The Targeted Labour Contract Participation Expenditure Report is required for monitoring the contractor's compliance for achieving the specified minimum targeted labour contract participation goal (CPG_L) and, if applicable, for calculating any penalty in terms thereof.

The Targeted Enterprises Contract Participation Expenditure Report (if applicable) is required for monitoring the contractor's compliance for achieving the specified minimum targeted enterprises contract participation goal (CPG_E) and, if applicable, for calculating any penalty in terms thereof.

The Expenditure Reports shall be verified by the Employer's Agent/Employer's Agent's Representative.

In respect of Annexes 2 and 3, the Employer shall, in addition to any other sanctions available to it, apply the financial penalties applicable to breach of preferencing conditions in the **Preference Schedule** in Part T2.2 Returnable Schedules.

3.5.2 PARTICIPATION OF TARGETED LABOUR

3.5.2.1 Minimum targeted labour contract participation goal

In support of the National Department of Public Works' Expanded Public Works Programme which is aimed at alleviating poverty through the creation of temporary employment opportunities using labour intensive methodologies and practices where possible, the Employer is seeking to increase the intensity of labour, as appropriate, in all of its infrastructure sector projects.

It is a requirement of this term tender contract, therefore, that the work be executed in such a manner so as to maximise the use of labour intensive construction methods in order to provide low and semi-skilled temporary employment opportunities.

To this end, a minimum targeted labour contract participation goal is specified below, which shall be achieved by the Contractor in the performance of each Works Project contract, failing which, penalties as described will be applied. The Contractor is required to provide all skills training where necessary, so as to ensure that a minimum level of competence is achieved and maintained, such that the various activities are carried out safely and to the required standard. The cost of training shall be included in the rates for the various work activities.

The specified minimum targeted labour contract participation goal (CPG_L) is | **0,25%**

The minimum CPG_L is such that the Contractor will have to carry out some of the work that would normally have been undertaken using mechanised construction methods, by using labour intensive construction methods instead. It is left to the discretion of the Contractor to identify suitable work activities for the intensification of labour. The Contractor shall, within 5 working days of being requested in writing by the Employer's Agent to do so, submit details of his/her plan to achieve the minimum CPG_L in the Works Project. If, due to the selection of items and quantities in any individual Works Project, it is not possible for the Contractor to achieve the specified minimum CPG_L on that particular Works Project, then the Employer's Agent, at his/her sole discretion, may reduce such minimum CPG_L upon motivation by the Contractor.

3.5.2.2 Definitions

For the purposes of the requirements in respect of the participation of targeted labour, the following definitions shall apply:

"Target area" means the geographical area described in the Works Project contract document.

"Targeted labour contract participation goal (CPG_L)" means the sum of the wages (excluding any benefits), for which the Contractor, or any of his/her sub-contractors contracts targeted labour in the performance of the contract, expressed as a percentage of the value of the contract.

"Targeted labour" means low and semi-skilled individuals, whose wages (excluding any benefits) do not exceed the threshold value, who reside in the target area, that are employed by the Contractor, or any of his/her sub-contractors, in the performance of the contract.

"Threshold value" is R450.00 per day as adjusted from time to time (excluding any benefits). The threshold value is not to be confused with any industry sector minimum wage determined in accordance with the Basic Conditions of Employment Act, 75 of 1977.

"Value of the contract" means the **Works Project** contract sum (accepted contract amount) less provisional sums, contingencies and VAT.

3.5.2.3 The selection and recruitment of targeted labour

Where targeted labour is to be drawn from specific local communities (defined in terms of the target area), such labour shall be identified using the relevant Sub-Council Job-Seekers Database. The Contractor shall request, via a Community Liaison Officer (if required in terms of the contract), a list of suitable candidates from the database, from which the Contractor shall make his/her final selection. The contractor shall enter into written contracts of temporary employment with all targeted labour.

Any difficulty experienced by the Contractor in identifying candidates though the Job-Seekers Database, or as regards any matter relating to the employment of targeted labour, shall be immediately referred to the Employer's Agent.

3.5.2.4 Contract participation goal credits

Credits towards the achieving the minimum CPG_L shall be granted by converting the total monetary val
of wages paid to targeted labour (including that of sub-contractors) to a percentage of the value of t

contract. No credits shall be accorded should the contractor/sub-contractor fail to enter into written contracts with the targeted labour. Furthermore, no credits shall be accorded in respect of targeted labour employed on work in respect of provisional sums or prime cost items. Such labour shall nevertheless be recorded on the Monthly Project Labour Report which is required to be furnished by the Contractor.

3.5.2.5 Training of targeted labour

The Contractor is required to provide all informal (on-the-job) skills training so as to ensure that a minimum level of competence is achieved and maintained, such that the various activities are carried out safely and to the required standard. The cost of informal training shall be included in the rates for the various work activities.

3.5.2.6 Penalties

The financial penalty to be applied for failing to meet the specified minimum targeted labour contract participation goal in the performance of the contract (unless proven to be beyond the control of the Contractor), is as follows:

$$\text{Penalty} = (CPG_L^S - CPG_L^A) \times P^*$$

Where CPG_L^S = the specified minimum targeted labour contract participation goal (expressed as a percentage).

CPG_L^A = the targeted labour contract participation goal achieved (expressed as a percentage).

P^* = the value of the contract.

3.5.3 COMMUNITY LIAISON OFFICER

Certain Works Projects may require a Community Liaison Officer (CLO) to be appointed by the Contractor. The primary functions of the CLO shall be to assist the Contractor with the selection and recruitment of targeted labour, to represent the local community in matters concerning the use of targeted labour (and/or enterprises) on the works, and to assist with and facilitate communication between the Contractor, the Employer's Agent and the local communities.

The identification of suitable candidates (maximum 5; minimum 3) for the CLO position shall be resolved by the relevant Sub-council Manager through a process of advertising and shortlisting. Should suitable candidates not be identified through this process, the Contractor shall be allowed to seek candidates from the relevant Sub-Council Job-Seekers Database. The final selection and appointment of the CLO in terms of the contract shall be the responsibility of the Contractor.

The period of appointment of the CLO shall be as stated in the Contract for Temporary Employment as a Community Liaison Officer referred to below. The date of commencement of temporary employment of the CLO shall be as agreed with the Employer's Agent.

If it is required, therefore, that the Contractor enter into a contract of temporary employment with the selected CLO, the contracting parties will be the Contractor and the CLO. To this end, a specimen Form of Contract of Temporary Employment as Community Liaison Officer is included in this document (Part C1.9 Community Liaison Officer). This Form of Contract sets out, inter alia, the agreement between the parties, the duties and conditions of employment of the CLO. The rate of remuneration for the CLO, payable by the Contractor, is currently **R460.00** per day). As said contract will be between the Contractor and the CLO, all costs involved shall be borne by the Contractor and items will be provided in the Bills of Quantities in the Works Project contract document therefor.

3.5.4. PARTICIPATION OF TARGETED ENTERPRISES

3.5.4.1 Minimum targeted enterprises contract participation goal

It is a requirement of this contract that enterprises located within the target area, as defined, be engaged by the Contractor for the provision of supplies, services or works necessary for the performance of this contract.

To this end, a minimum targeted enterprises contract participation goal is specified below, which shall be achieved by the Contractor in the performance of the contract, failing which, penalties as described will be applied.

The specified minimum targeted enterprises contract participation goal (CPG_E) is 0 %

The Contractor shall engage targeted enterprises directly or indirectly in the performance of the contract to the extent that the total monetary value of such engagements (exclusive of VAT), expressed as a percentage of the value of the contract, is sufficient to achieve the specified minimum CPG_E.

3.5.4.2 Definitions

For the purposes of the requirements in respect of the participation of targeted enterprises, the following definitions shall apply:

"Target area" means the geographical area described in the Works Project contract document.

"Targeted enterprises contract participation goal (CPG_E)" means the value of supplies, services or works (exclusive of VAT), for which the Contractor contracts targeted enterprises, either directly or indirectly, in the performance of the contract, expressed as a percentage of the value of the contract.

"Targeted enterprises" means any sole trader, partnership or legal entity that acts as a supplier, manufacturer, service provider or sub-contractor, and which has its base of operations in the target area.

"Value of the contract" means the contract sum (accepted contract amount) less provisional sums, contingencies and VAT.

3.5.4.3 Achieving the contract participation goal

The contractor may achieve the specified minimum CPG_E as follows:

a) by engaging one or more targeted enterprises to perform commercially useful functions in the performance of the contract;

b) by engaging non-targeted enterprises, who in turn engage one or more targeted enterprises to perform commercially useful functions in the performance of the contract;

c) by a combination of the above.

The Contractor shall, within 5 working days of being requested by the Employer's Agent to do so, submit details of his/her plan to achieve the minimum CPG_E.

3.5.4.4 Contract participation goal credits

Credits towards achieving the minimum CPG_E shall be granted by converting the total monetary value (exclusive of VAT) of the agreements between the Contractor, or Contractor's sub-contractors, and targeted enterprises, to a percentage of the value of the contract.

No credits shall be accorded should the Contractor (or sub-contractors):

a) make direct payment to third parties in connection with the contract on behalf of targeted enterprises, when such payment is recovered by making deductions from payments due to the targeted enterprise;

b) fail to enter into written contractual agreements with the relevant targeted enterprises.

Credits claimed towards the contract participation goal shall be denied where such written contractual agreements contain any of the following:

c) conditions which are more onerous than those that exist in the prime contract (this contract);

d) payment procedures based on a pay when paid system;

e) authoritarian rights given to the employing contractor, with no recourse to independent adjudication in the event of a dispute arising.

No credits may be claimed in respect of targeted enterprises that that do not adhere to statutory labour practices.

No credits shall be accorded in respect of targeted enterprises engaged on work in respect of provisional sums or prime cost items.

In the event that a targeted enterprise sub-contracts to another targeted enterprise, only the value of the higher level sub-contract shall be granted as credit towards achieving the specified minimum CPG_E.

In addition to the form required for contract administration (the Targeted Enterprises Contract Particip
Expenditure Report), the Contractor shall furnish the Employer's Agent, upon written request,

documentary evidence that the targeted enterprises have their base of operations in the target area, copies of the contractual agreements with the various targeted enterprises, as well as documentary proof of payments made to the various targeted enterprises.

3.5.4.5 Penalties (Not applicable)

The financial penalty to be applied for failing to meet the specified minimum targeted enterprises contract participation goal in the performance of the contract (unless proven to be beyond the control of the Contractor), is as follows:

$$\text{Penalty} = (CPG_E^S - CPG_E^A) \times P^*$$

Where CPG_E^S = the specified minimum targeted enterprises contract participation goal (expressed as a percentage).

CPG_E^A = the targeted enterprises contract participation goal achieved (expressed as a percentage).

P^* = the value of the contract.

3.5.5 ENVIRONMENTAL MANAGEMENT PROGRAMME

Particular Specification E: Environmental Management Specification and its Annexures are attached hereto.

3.5.6 HEALTH AND SAFETY

Particular Specification H: Health and Safety Specification is attached hereto.

[redacted]

E: ENVIRONMENTAL MANAGEMENT SPECIFICATION

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[redacted]

E: ENVIRONMENTAL MANAGEMENT SPECIFICATION

For use with the General Conditions of Contract for Construction Works, Third Edition, 2015.

E1 SCOPE

The Environmental Management Programme (EMP) for the project is comprised of this Environmental Management (EM) Specification and its Annexures, including the "Additional environmental issues deemed to form part of the Environmental Management Specification" attached as Annexure D hereto, which together cover the requirements for controlling the impact on the environment of construction activities.

E2 INTERPRETATIONS

E2.1 Supporting specifications

The following standardised specification shall, *inter alia*, apply to this Contract:

a) SANS 1200A, as may be varied or added to in the Scope of Work

E2.2 Application

This EM Specification contains clauses that are generally applicable to the undertaking of construction works in areas where it is necessary to impose pro-active controls on the extent to which the construction activities impact on the environment.

In the event of any difference or discrepancy between the provisions of the Standardised Specifications and the provisions of the EM Specification, the latter shall prevail.

E2.3 Definitions and abbreviations

For the purposes of this EM Specification the following definitions and abbreviations shall apply:

E2.3.1 Environment

The surroundings within which humans exist and that are made up of -

a) the land, water and atmosphere of the earth;
b) micro-organisms, plant and animal life;
c) any part or combination of i) and ii) and the interrelationships among and between them; and
d) the physical, chemical, aesthetic and cultural properties and conditions of the foregoing that influence human health and well-being.

[redacted]

E2.3.2 Potentially hazardous substance

A substance which, in the reasonable opinion of the Employer's Agent, can have a deleterious effect on the environment.

E2.3.3 Method Statement

A written submission by the Contractor to the Employer's Agent in response to the EM Specification or a request by the Employer's Agent, setting out the plant, materials, labour and method the Contractor proposes using to carry out an activity, in such detail that the Employer's Agent is enabled to assess whether the Contractor's proposal is in accordance with the Scope of Work and/or will produce results in accordance with the EM Specification.

E2.3.4 Reasonable

Unless the context indicates otherwise, means reasonable in the opinion of the Employer's Agent after he has consulted with a person suitably experienced in "environmental implementation plans" and "environmental management plans" (both as defined in the National Environmental Management Act, 107 of 1998).

E2.3.5 Solid waste

All solid waste, including construction debris, chemical waste, excess cement/ concrete, wrapping materials, timber, tins and cans, drums, wire, nails, domestic waste, dead vegetation, asphalt products, etc.

E2.3.6 Contaminated water

Water contaminated by the Contractor's activities containing cements, concrete, lime, paint products, thinners, turpentine, chemicals, fuels, oils washing detergents, etc.

E2.3.7 Working area

Any area within the boundaries of the Site where construction is taking place.

E2.3.8 Contractor's camp or construction camp

The area designated for all temporary site offices, storage areas, construction plant parking areas, staff welfare facilities, etc.

E2.3.9 Employer's Agent

The person/firm so named in the Contract Data, whose function is to administer the Contract as agent of the Employer.

E2.3.10 Employer's Agent's Representative (ER)

The natural person appointed by the Employer's Agent in terms of the Contract, who shall observe the execution of the Works, examine and test materials and workmanship, and deliver and receive communications to/from the Contractor.

E2.3.11 Environmental Officer (EO)

Appointed by the Employer's Agent as his environmental representative on Site, with the mandate to enforce compliance with the EMP. The duties of the EO are stipulated in the City's guideline document for the EO and ER.

E2.3.12 Environmental Control Officer (ECO)

An independent appointment to objectively monitor implementation of relevant environmental legislation, conditions of Environmental Authorisations (EAs), and the EMP for the project.

E2.3.13 Environmental Site Officer (ESO)

Employed by the Contractor as his environmental representative to monitor, review and verify compliance with the EMP by the Contractor. The ESO must ensure that he is involved at all phases of the construction (from site clearance to rehabilitation).

E2.3.14 Abbreviations

The following abbreviations occur in this EM Specification:

EMP - Environmental Management Programme
EM Specification – Environmental Management Specification
EO - Environmental Officer
ECO – Environmental Control Officer
ESO – Environmental Site Officer
ER – Employer's Agent's Representative
MSDS - Material Safety Data Sheets

E2.4 Employer's Agent's authority to delegate

In terms of Clause 3.2.4 of the General Conditions of Contract, Third Edition, 2015 (GCC 2015), the Employer's Agent has the authority to appoint a representative. Other than the Employer's Agent's Representative (ER) in terms of Clause 3.2, this can be in the form of an Environmental Officer (EO), who shall be responsible for monitoring compliance with the EMP. All instructions given by the EO shall go through the ER, who will then convey these to the Contractor, except in the case of an environmental emergency, in which case the EO can issue an instruction directly to the Contractor. An environmental emergency is one which, in the opinion of the EO, would cause serious environmental harm if not addressed immediately.

Depending on the nature/environmental sensitivity of the Contract the following variations in the organisational structure are possible:

a) The ER may work together with an EO; or
b) There may be an ER only (for construction projects with low potential for causing significant environmental impacts). In this case the ER has responsibility for the EO's functions.
c) There may be an independently appointed Environmental Control Officer (ECO) who will fulfil essentially the same functions as the EO. The ECO may work with just the ER (if there is no EO) or may work with both the ER and EO.

The term "Employer's Agent" in this EM Specification refers to the Employer's Agent as defined in Clause E2.3.9 acting through the ER/EO/ECO as delegated.

E3 MATERIALS

E3.1 Materials handling, use and storage

The Contractor shall ensure that any delivery drivers are informed of all procedures and restrictions (including "no go" areas) required to comply with the EM Specification. The Contractor shall ensure that these delivery drivers are supervised during off loading by someone with an adequate understanding of the requirements of the EM Specification.

Materials shall be appropriately secured to ensure safe passage between destinations. Loads, including but not limited to, sand, stone chip, fine vegetation, refuse, paper and cement, shall have appropriate cover to prevent them spilling from the vehicle during transit. The Contractor shall be responsible for any clean-up resulting from the failure by his employees or suppliers to properly secure transported materials.

All manufactured and or imported materials shall, where reasonably possible, be stored within the Contractor's camp and, if so required by the Employer's Agent, out of the rain. The location and method of protection of such materials stored outside of the Contractor's camp and the method of rehabilitation of these areas, shall be subject to the Employer's Agent's approval.

Stockpile areas shall be approved by the Employer's Agent before any stockpiling commences.

E4 Hazardous substances

Hazardous chemical substances (as defined in the Regulations for Hazardous Chemical Substances in GN 1179 (25 August 1995)) stored on Site for use during construction shall be stored in secondary containers which are clearly and appropriately marked/signed. The relevant Material Safety Data Sheets (MSDS) shall be available on Site. Procedures detailed in the MSDSes shall be followed in the event of an emergency situation.

If potentially hazardous substances are to be stored on Site, the Contractor shall inform the Employer's Agent of such substances and provide a Method Statement detailing the substances/ materials to be used, together with the storage, handling and disposal procedures of the materials. Hazardous substances shall be stored out of flood risk areas and disposal of these substances shall be at a licensed waste dispos facility. **PLANT (referring to "Construction Equipment" as defined in GCC 2015, and the Contra facilities as used in SANS 1200A)**

E4.1 Fuel (petrol and diesel) and oil

E4.1.1 Storage

If fuel and oil is to be stored on Site, then the Contractor shall submit a Method Statement covering the procedures for dealing with accidental hydrocarbon spillage and leaks, and detailing how these liquids will be stored, handled and disposed of.

The Employer's Agent shall approve the location of all fuel storage areas. All necessary approvals with respect to fuel storage and dispensing shall be obtained from the appropriate authorities. Symbolic safety signs depicting **"No Smoking", "No Naked Lights"** and **"Danger"** conforming to the requirement of SANS 1186 are to be prominently displayed in and around the fuel storage area. There shall be adequate fire-fighting equipment at the fuel storage area.

The Contractor shall ensure that all liquid fuels and oils are stored in tanks with lids, which are kept firmly shut and adequately secured. The capacity of the tank shall be clearly displayed and the product contained within the tank clearly identified using the emergency information system detailed in SANS 0232 part 1. Fuel storage tanks shall have a capacity not exceeding 9000 litres and shall be kept on site only for as long as fuel is needed for construction activities, on completion of which they shall be removed.

The tanks shall be situated on a smooth impermeable base with an earth bund. The volume inside the bund shall be 110% of the total capacity of the largest storage tank. The base may be constructed of concrete, or of plastic sheeting with impermeable joints, covered by a layer of compacted earth to protect the sheeting. The impermeable lining shall extend to the crest of the bund. The floor of the storage area shall be sloped to enable any spilled fuel and/or fuel-contaminated water to be removed easily.

If any rainwater collects in the bunded areas, it shall be promptly removed and taken off Site to a disposal site approved by the Employer's Agent.

Only empty and externally clean tanks may be stored on the bare ground. Empty and externally dirty tanks shall be sealed and stored on an area where the ground has been protected.

Adequate precautions shall be provided to prevent spillage during the filling of any tank and during the dispensing of the contents. If fuel is dispensed from 200 litre drums, the proper dispensing equipment shall be used, and the drum shall not be tipped in order to dispense fuel. The dispensing mechanism for the fuel storage tanks shall be stored in a waterproof container when not in use.

E4.1.2 Refuelling

Plant shall be refuelled at a designated refuelling area approved by the Employer's Agent. The surface under the temporary refuelling area shall be protected against pollution to the reasonable satisfaction of the Employer's Agent prior to any refuelling activities. The Contractor shall ensure that there is always a supply of absorbent material (e.g. Spill Sorb or Enretech #1 powder or equivalent) readily available that is designed to absorb, break down and encapsulate minor hydrocarbon spillage. The quantity of such material shall be able to handle a minimum of 200 litres of hydrocarbon liquid spill.

E4.1.3 Treatment and remediation

Treatment and remediation of hydrocarbon spill and leak areas shall be undertaken to the satisfaction of the Employer's Agent. In the event of a hydrocarbon spill the source of the spillage shall be isolated and the spillage contained.

E4.2 Ablution and toilet facilities

Washing, whether of the person or of personal effects, defecating and urinating are strictly prohibited other than at the facilities provided.

The Contractor shall provide ablution facilities for all personnel employed on the Site, including shelter, toilets and washing facilities. The Contractor's personnel will not be permitted to use the City's ablution facilities.

[redacted]

Toilet facilities provided by the Contractor shall occur in a ratio of not less than 1 toilet per 30 workers (1:15 is preferred) of each sex. Toilet facilities shall be located within the Contractor's camp, but also at work areas remote from the camp, all to the satisfaction of the Employer's Agent. All portable toilets shall be adequately secured to the ground to prevent them toppling over as a result of wind or any other cause.

The Contractor shall ensure that the entrances to these toilets are adequately screened from view, that they are maintained in a hygienic state, serviced regularly, that no spillage occurs when they are cleaned and that contents are removed from Site. Toilets shall also be emptied before any temporary site closure for a period exceeding one week. Discharge of waste from toilets into the environment and burial of waste is strictly prohibited. The Contractor shall provide toilet paper at all times.

No ablution facilities shall be located closer than 50m to any water body

A Method Statement shall be provided by the Contractor detailing the provision, location, and maintenance of ablution facilities.

E4.3 Eating areas

The Contractor shall designate eating areas within the approved Contractor's camp. The feeding of, or leaving of food for, animals is strictly prohibited. Sufficient bins, as specified in Clause E4.4 below, shall be present in these areas.

Any cooking on Site shall be done on well-maintained gas cookers with fire extinguishers present. No open fires for cooking purposes shall be permitted, unless for occasional use in facilities specifically provided for this purpose and within the confines of the Contractor's camp.

E4.4 Solid waste management

E4.4.1 Litter and refuse

The site shall be kept neat and clean at all times, littering is prohibited.

No on-site burying or dumping of any waste materials, vegetation, litter or refuse shall occur. The Contractor shall provide scavenger and weatherproof bins with lids, of sufficient number and capacity to store the solid waste produced on a daily basis. The lids shall be kept firmly on the bins at all times. Bins shall not be allowed to become overfull and shall be emptied regularly, at least once a week. Waste from bins may be temporarily stored on Site in a central waste area that is weatherproof and scavenger-proof, and which the Employer's Agent has approved. Wherever possible refuse shall be recycled, and containers for glass, paper, metals and plastics shall be provided and the contents delivered to suitable recycling facilities when necessary.

All other litter and refuse shall be disposed of off Site at an approved landfill site. The Contractor shall supply the Employer's Agent with a certificate of disposal.

E4.4.2 Construction waste

Where possible all construction waste or spoil material shall be recycled, either on Site or elsewhere. As a last resort all construction waste shall be disposed of off Site at an approved landfill site. The Contractor shall supply the Employer's Agent with a certificate of disposal.

E4.5 Contaminated water management

Potential pollutants of any kind and in any form shall be kept, stored, and used in such a manner that any spill or escape can be contained and the water table and/or any adjacent water courses or bodies are not endangered. Spill kits which can be used to contain and/or mop up spills shall be available. Water containing such pollutants as cements, concrete, lime, chemicals, oils and fuels shall be discharged into a conservancy tank for removal from the Site to a licensed disposal facility. This particularly applies to water emanating from concrete batching plants and to runoff from fuel storage, refuelling or construction equipment washing areas. Wash down areas shall be placed and constructed in such a manner so as to ensure that the surrounding areas are not polluted.

No paint products, chemical additives and cleaners, such as thinners and turpentine, may be disposed of into the stormwater system or elsewhere on Site. Brush/roller wash facilities shall be established to the satisfaction of the Employer's Agent.

A Method Statement shall be provided by the Contractor detailing the management of contaminated water.

Should contaminated water be released into the environment, specifically into a water course, monitoring thereof shall commence in accordance to the National Water Act, 36 of 1998, Section 21(f) – refer to GN 399 (26 March 2004). Contaminated water must not be released into the environment without authorisation from the relevant authority.

The Contractor shall notify the Employer's Agent immediately of any pollution incidents on Site and, at his own cost, take all reasonable measures to contain and minimise the effects of the pollution.

Any rehabilitation of the environment required as a result of such pollution shall be carried out by the Contractor at his own cost in accordance with a Method Statement approved by the Employer's Agent.

E4.6 Site structures

The type and colour of roofing and cladding materials to the Contractor's temporary structures shall be selected to reduce the visual impact.

E4.7 Lights

The Contractor shall ensure that any lighting installed on the Site for his activities does not cause a reasonably avoidable disturbance to other users of the surrounding area.

Lighting installed shall, as far as practically possible, be energy efficient. Lighting utilised on Site shall be turned off when not in use.

E4.8 Workshop, equipment maintenance and storage

No workshops or plant maintenance facilities shall be constructed on Site for performing major or routine maintenance of equipment and vehicles.

The Contractor shall ensure that in those areas where, after obtaining the Employer's Agent's approval, the Contractor carries out emergency or minor routine plant maintenance, there is no contamination of the soil, water sources or vegetation. Drip trays to collect waste oil and other lubricants shall be provided in any areas of the Site where such maintenance takes place. Drip trays must be emptied regularly and after rain, and the contents disposed of at a licensed disposal facility.

All vehicles and plant shall be kept in good working order. Leaking vehicles and plant shall be repaired immediately or removed from the Site.

The washing of vehicles and plant on Site shall be restricted to emergency or minor routine maintenance requirements only. Washing may only be undertaken in areas designated by the Employer's Agent.

E4.9 Noise

The Contractor shall limit noise levels (for example, by installing and maintaining silencers on plant). The provisions of SANS 1200A Clause 4.1 regarding "built-up areas" shall apply.

Appropriate directional and intensity settings are to be maintained on all hooters and sirens.

No amplified music shall be allowed on Site. The use of audio equipment shall not be permitted, unless the volume is kept sufficiently low so as to be unobtrusive. The Contractor shall not use sound amplification equipment on Site, unless in emergency situations.

Construction activities generating output levels of 85 dB(A) or more in residential areas, shall be confined to the hours 08h00 to 17h00 Mondays to Fridays. Should the Contractor need to do this work outside of the above times, he shall do so only with the approval of the Employer's Agent, and the surrounding communities shall be informed prior to the work taking place.

E5 CONSTRUCTION

E5.1 Method Statements

The Contractor shall submit the environmental method statements required within such reasonable time as the Employer's Agent shall specify or as required by the EM Specification. The Contractor shall not commence any activity until the Method Statement in respect thereof has been approved and shall, except in the case of emergency activities, allow a period of two weeks for consideration of the Method Statement by the Employer's Agent.

The Employer's Agent may require changes to a Method Statement if the proposal does not comply with the specification or if, in the reasonable opinion of the Employer's Agent, the proposal may result in, or carries a greater than reasonable risk of, damage to the environment in excess of that permitted by the EM Specification.

Approved Method Statements shall be readily available on the Site and shall be communicated to all relevant personnel. The Contractor shall carry out the Works in accordance with the approved Method Statement. Approval of the Method Statement shall not absolve the Contractor from any of his obligations or responsibilities in terms of the Contract.

Changes to the way the Works are to be carried out must be reflected by amendments to the original approved Method Statements, and these amendments require the signature of both the Contractor and the Employer's Agent.

Method Statements shall consider all environmental hazards and risks identified by the Contractor and/or Employer's Agent and shall contain sufficient information and detail to enable the Employer's Agent to assess the potential negative environmental impacts associated with the proposed activity and shall cover applicable details with regard to:

a) construction procedures,
b) materials and equipment to be used,
c) getting the equipment to and from Site,
d) how the equipment/material will be moved while on Site,
e) how and where material will be stored,
f) the containment (or action to be taken if containment is not possible) of leaks or spills of any liquid or material that may occur,
g) the control of fire,
h) timing and location of activities,
i) compliance/non-compliance with the EM Specification,
j) any other information deemed necessary by the Employer's Agent.

The format to be used for the required method statements is bound in Annexure A of this EM Specification. The Contractor (and, where relevant, any sub-contractors) must also sign the Method Statement, thereby indicating that the work will be carried out according to the methodology contained in the approved Method Statement.

E5.1.1 Method Statements to be provided within 14 days from the Commencement Date

a) Layout and Preparation of Contractor's Camp (E5.4).

b) Ablution Facilities: number of, location, cleaning, method of securing to the ground, etc. of portable toilets (E4.2).

c) Solid Waste Management: number of, type, location, cleaning, method of securing to the ground, etc. of bins (E4.4).

d) Environmental Awareness Training: logistics for the environmental awareness courses for all the Contractor's management staff, as well as other employees (E5.2).

e) Emergency Procedures for Accidental Hydrocarbon Leaks and Spillages (E4.1 and E5.8).

f) Asphalt and Bitumen: details of all methods and logistics associated with the use of bitumen and asphalt (E5.11).

E5.2 Environmental Awareness Training

It is a requirement of this Contract that environmental awareness training courses are run for all personnel on Site. Two types of courses shall be run: one for the Contractor's and subcontractors' management, and one for all site staff and labourers. Courses shall be run during normal working hours at a suitable venue provided by the Contractor. All attendees shall remain for the duration of the course and sign an attendance register that clearly indicates participants' names on completion, a copy of which shall be handed to the Employer's Agent. The Contractor shall allow for sufficient sessions to train all personnel. Subsequent sessions shall be run for any new personnel coming onto Site. A Method Statement with respect to the organisation of these courses shall be submitted.

Notwithstanding the specific provisions of this clause, it is incumbent upon the Contractor to convey the spirit of the EM Specification to all personnel involved with the Works.

[redacted]

E5.2.1 Training Course for Management and Foremen

The environmental awareness training course for management shall include all management and foremen. The course, which shall be presented by the Employer's Agent or his designated representative, shall be of approximately one hour duration. The course shall be undertaken prior to the commencement of work on Site.

E5.2.2 Training Course for Site Staff and Labour

The environmental awareness training course for site staff and labour shall be presented by the Contractor from material provided by the Employer's Agent. The course shall be approximately one hour long. The course shall be undertaken not later than 3 working days after the commencement of work on Site, with sufficient sessions to accommodate all available personnel.

All the Contractor's employees, sub-contractors' employees and any suppliers' employees that spend more than 1 day a week or four days in a month on Site shall attend the Environmental Awareness Training Course for Site Staff and Labour

E5.3 Contractor's Environmental Representative (ESO)

The Contractor shall appoint an environmental representative, also called an Environmental Site Officer (ESO), who shall be responsible for undertaking a daily site inspection to monitor compliance with this EM Specification. The Contractor shall forward the name of the environmental representative (ESO) to the Employer's Agent for his approval. The environmental representative (ESO) shall complete Environmental Site Inspection Checklists (Annexure B attached hereto) and these shall be submitted to the Employer's Agent once a week.

E5.4 Site division, demarcation and "no go" areas

The Contractor shall restrict all his activities, materials, plant and personnel to within the Site or any particular working areas specified or indicated on the drawings.

The Contractor shall erect and maintain permanent and/or temporary fences of the type and in the locations specified elsewhere in the Scope of Work or on the drawings. Such fences shall, if so specified, be erected before undertaking any construction activities.

Where environmentally sensitive areas are specified as "no go" areas, the Contractor shall ensure that, insofar as he has the authority, no person, plant or material shall enter the "no go" areas at any time.

A Method Statement detailing the layout and method of establishment of the Contractor's camp (including all offices, shelters, eating areas, storage areas, ablution facilities and other infrastructure required for the running of the project) shall be provided.

E5.5 Access routes/ haul roads

On the Site and, if so required, within such distance of the Site as may be stated by the Employer's Agent, the Contractor shall control the movement of all vehicles and construction equipment, including that of his suppliers, so that they remain on designated routes, are distributed so as not to cause an undue concentration of traffic, and that all relevant laws are complied with. In addition, the movement of such vehicles and construction equipment shall be planned and operated so as to minimise disruption to regular users of the routes. As far as possible the Contractor shall use existing access and haul routes. Damage to existing access roads as a result of construction activities shall be repaired to the satisfaction of the Employer's Agent, using material similar to that originally used. The cost of the repairs shall be borne by the Contractor. New temporary access or haul routes may only be established with the prior approval of the Employer's Agent. The rehabilitation of such routes shall be to the Contractor's own cost and to the approval of the Employer's Agent.

Any directional signage required by the Contractor for the purposes of directing the movement of his own vehicles and construction equipment (or that of his subcontractors or suppliers) must be of a design and in a location approved by the Employer's Agent. Directional signage may not be erected in such a manner that it interferes with sight lines or pedestrian movement.

E5.6 Construction personnel information posters

The Contractor shall erect and maintain information posters for the information of his employees, depicting actions to be taken to ensure compliance with aspects of the EM Specification. A2 information posters, printed on white vinyl, shall be erected at the eating areas and any other locations specified by the Employer's Agent.

The specification for the poster is presented in Annexure C of this EM Specification. The symbols shall be black and the circles shall be red lines. The Contractor shall ensure that the construction personnel information p[redacted] are not damaged in any way, and shall replace a poster if any part of it becomes illegible.

E5.7 Fire control

Other than for cooking purposes as specified in Clause E4.3, no fires may be lit on Site. Any fires which occur shall be reported to the Employer's Agent immediately.

Smoking shall not be permitted in those areas where it is a fire hazard. Such areas shall include fuel storage and refuelling areas, and any other areas where the vegetation or other materials are susceptible to the start and rapid spread of fire.

In terms of the National Environment Management: Air Quality Act, 39 of 2004 and Community Fire Safety By-law, burning is not permitted as a disposal method.

The Contractor shall appoint a Fire Officer (who may be the ESO) who shall be responsible for ensuring immediate and appropriate actions in the event of a fire and shall ensure that employees are aware of the procedure to be followed. The Contractor shall advise the relevant authority of a fire as soon as one starts and shall not wait until he can no longer control it. The Contractor shall forward the name of the Fire Officer to the Employer's Agent for his approval.

The Contractor shall comply with Clause 27 of the Construction Regulations, 2003 where applicable, and shall ensure that there is suitable and sufficient fire-fighting equipment available on Site at all times.

The Contractor shall be liable for any costs relating to the rehabilitation of burnt areas, should the fire be the result of the Contractor's activities on Site

The Contractor shall submit a Method Statement to the Employer's Agent covering the procedure to be followed in the event of a fire.

E5.8 Emergency procedures

The Contractor's attention is drawn to the Method Statements required in terms of Clauses E4.1 and E5.7 above. Such Method Statements shall include procedures to be followed by the Contractor in the event of an emergency.

Furthermore, in the event of an emergency the Contractor shall contact the City of Cape Town's Emergency Call Centre by telephoning 107 or 021 480 7700 (from a cell phone).Telephone numbers of emergency services, including the local fire fighting service, shall be posted conspicuously in the Contractor's office near the telephone.

E5.9 Health and safety

The Contractor shall comply with requirements of the Occupational Health and Safety Act, 85 of 1993 and Construction Regulations, 2014, the Health and Safety Specification and relevant clauses of GCC 2015, insofar as health and safety is concerned.

E5.10 Community relations

If so required, the Contractor shall erect and maintain information boards in the position, quantity, design and dimensions specified in the Scope of Work or as directed by the Employer's Agent. Such boards shall include contact details for complaints by members of the public in accordance with details provided by the Employer's Agent.

The Contractor shall keep a "Complaints Register" on Site. The Register shall contain all contact details of the person who made the complaint, and information regarding the complaint itself.

E5.11 General protections in terms of the National Heritage Resources Act, 25 of 1999

The Contractor shall take cognisance of the provisions of the National Heritage Resources Act, 25 of 1999 in respect of, *inter alia*, structures older than 60 years; archaeology, palaeontology and meteorites; burial grounds and graves; and public monuments and memorials.

[redacted]

E5.12 Protection of natural features

The Contractor shall not deface, paint, damage or mark any natural features (e.g. rock formations) situated in or around the Site for survey or other purposes, unless agreed beforehand with the Employer's Agent. Any features affected by the Contractor in contravention of this clause shall be restored/ rehabilitated to the satisfaction of the Employer's Agent. The cost of restoration/rehabilitation shall be borne by the Contractor.

The Contractor shall not permit his employees to make use of any natural water sources (e.g. springs, streams, open water bodies) for the purposes of swimming, personal washing and the washing of machinery or clothes.

E5.13 Protection of flora and fauna

Except to the extent necessary for the carrying out of the Works, as specified by the Employer's Agent, no vegetation shall be removed, damaged or disturbed.

The presence of any wild animals found on Site shall be reported to the Employer's Agent, who shall issue an instruction with regard to their removal or relocation. If a wild animal needs removal from the Site the Cape Nature (Metro Region) Conservation Services Manager may be contacted for assistance (tel 021 955 9132/9121/3122/9130). Trapping poisoning, injuring or shooting animals is strictly forbidden. No domestic pets or livestock are permitted on Site, with the exception of controlled watchdogs approved by the Employer's Agent.

Where the use of herbicides, pesticides and other poisonous substances has been specified, the Contractor shall submit a Method Statement to the Employer's Agent for approval.

E5.14 Erosion and sedimentation control

The Contractor shall take all reasonable measures to limit erosion and sedimentation due to the construction activities and shall, in addition, comply with such detailed measures as may be required by the Scope of Work. Where erosion and/or sedimentation, whether on or off the Site, occurs, rectification shall be carried out in accordance with details specified by the Employer's Agent. Where erosion and/or sedimentation occur due to the fault of the Contractor, rectification shall be carried out to the reasonable requirements of the Employer's Agent, at the Contractor's cost. In particular, the Contractor shall ensure that the City's stormwater system is kept free from sediment arising from the Works.

Any runnels or erosion channels developed during the construction period or during the vegetation establishment period shall be backfilled and compacted, and the areas restored to a proper condition. Stabilisation of cleared areas to prevent and control erosion shall be pro-actively managed by the Contractor. The method of stabilisation shall be determined in consultation with the Employer's Agent.

E5.15 Aesthetics

The Contractor shall take any requisite measures to ensure that construction activities do not have an undue negative impact on the aesthetics of the area.

E5.16 Temporary site closure

In the event of temporary site closure (for a period exceeding one week), the Contractor's ESO shall carry out checks and ensure that, amongst others, the following conditions pertain and report on compliance with this clause:

a) Fire extinguishers are serviced and accessible.
b) There is adequate ventilation in enclosed spaces.
c) All hazardous substance stores are securely locked.
d) Fencing and barriers are in place.
e) Emergency and management contact details are prominently displayed and available.
f) Wind and dust mitigation measures, e.g. straw, brush packs, irrigation, etc. are in place.
g) Excavated and filled slopes and stockpiles are at a stable angle and capable of accommodating normal expected water flows.
h) There are sufficient detention ponds or channels in place.
i) Cement and materials stores are secured.
j) Toilets are empty and secured.
k) Central waste area and all refuse bins are empty and secured.
l) Contaminated water conservancy tank empty.
m) Any bunded areas are clean and treated with an approved product where applicable (e.g. Spill Sorb or Enretech #1 powder or equivalent).
n) Drip trays are empty and secure

[redacted]

E5.17 Asphalt and bitumen

Bitumen drums/products, if stored on Site, shall be stored in an area approved by the Employer's Agent. This area shall be indicated on the Method Statement for the Layout and Preparation of the Contractor's Camp. The storage area shall be constructed with an appropriate base, bunding and sump to the satisfaction of the Employer's Agent. A Method Statement shall be provided in this regard.

When heating bitumen products, the Contractor shall take cognisance of appropriate fire risk controls. Heating shall only be undertaken using LPG or similar zero emission fuels. Appropriate fire fighting equipment shall be readily available on Site.

E5.18 Dust

The Contractors shall be solely responsible, at his cost, for the control of dust arising from his activities on Site, and for any costs involved in damages resulting from the dust. The Contractor shall take all reasonable measures to minimise the generation of dust

E5.19 Contractor's advertising signage

Any advertising on the Site or any part of the Works shall remain at the sole discretion of the Employer, who reserves the right to order, via the Employer's Agent, its removal, covering or re-sizing, wherever placed, at no cost to the Employer.

Apart from at the Contractor's camp, no signage advertising the Contractor, or any of its subcontractors, manufacturers, suppliers or service providers shall be placed, fixed or erected anywhere on the Site or on the Works without the prior approval of the Employer's Agent. No advertising signage will be permitted on any designated scenic route. Notwithstanding any prior approval given, the Employer's Agent may instruct the Contractor to remove, cover or re-size any advertising signage at any time at no cost to the Employer.

Advertising signage at the Contractor's camp shall be appropriately designed and sized with due consideration to the surrounding environment, views and sight lines.

Branding or identification markings on the Contractor's and subcontractor's vehicles and equipment is generally permitted, although the Employer reserves the right to instruct, via the Employer's Agent, the removal, covering or re-sizing of any branding, markings or signage, on any equipment (scaffolding, for example), which it considers inappropriate in the environment in which it is placed.

No third party advertising (that is, in respect of any person, business or product that is not associated with the Works) shall be permitted anywhere on the Site or Works.

E5.20 Clearance of Site on completion

On completion of the Works, and at final completion when all defects have been remedied or corrected, the Contractor shall, in addition to the requirements for clearance of the Site in terms of the Contract, ensure that he has complied with the following requirements in terms of this EM Specification:

E5.20.1 Clause E3.1

Clean-up of improperly secured transported materials, and rehabilitation of storage areas.

E5.20.2 Clause E4.1.3

Remediation of hydrocarbon spill and leak areas.

E5.20.3 Clause E4.4

Disposal of litter, refuse and Contractor's waste.

E5.20.4 Clause E5.4

Removal of temporary fences and Contractor's camp.

E5.20.5 Clause E5.5

Repair of access roads damaged by the Contractor, and rehabilitation of temporary access routes.

[redacted]

E5.20.6 Clause E5.7

Rehabilitation of burnt areas should a fire be the result of Contractor's activities on Site.

E5.20.7 Clauses E5.11 to 5.13

Rehabilitation of heritage and natural features, including vegetation which is damaged or disturbed, which required protection in terms of these clauses.

E5.20.8 Clause E5.14

Rectification where erosion and/or sedimentation has occurred due to the fault of the Contractor .

E5.20.9 Clause E5.19

Removal of Contractor's advertising signage.

E6 TOLERANCES

E6.1 Fines

Environmental management is concerned not only with the final results of the Contractor's operations, but also with the control of how these operations are carried out. Tolerance with respect to environmental matters applies not only to the finished product, but also to the standard of the day-to-day operations required to complete the Works.

It is thus required that the Contractor shall comply with the EM Specification on an on-going basis and any failure on his part to do so will entitle the Employer's Agent to certify the imposition of a fine. Fines may be issued per incident at the discretion of the Employer's Agent. Such fines will be issued in addition to any remedial costs incurred as a result of non-compliance with the environmental specifications. The Employer's Agent will inform the Contractor of the contravention and the amount of the fine, and will deduct the amount from monies due in payment certificates issued under the Contract.

Maximum fines for the following transgressions by either the Contractor and/or his sub-contractors may be imposed by the Employer's Agent, as follows:

		Maximum fine per incident
a)	Vehicles, plant or materials related to the Contractor's operations, parked or stored outside the demarcated boundaries of the Site.	R 2 000
b)	Persons, vehicles, plant or materials related to the Contractor's operations, found within the designated boundaries of a "no go" area.	R 4 000
c)	Persistent and unrepaired oil leaks from machinery/not using a drip tray to collect waste oil and other lubricants/not using specified absorbent material to encapsulate hydrocarbon spillage/using inappropriate methods of refuelling (the use of a funnel rather than a pump).	R 3 000
d)	Refuelling in areas not approved by the Employer's Agent.	R 3 000
e)	Litter on Site.	R 1 000
f)	Deliberate lighting of fires on Site.	R 5 000
g)	Individual not making use of the Site ablution facilities.	R 1 000
h)	Damage to trees not specified to be removed.	R 5 000
i)	Dust or excessive noise emanating from the site	R 1 000
j)	Not containing water contaminated with pollutants such as cement, concrete, fuel, etc.	R 2 000

For each subsequent similar offence the fine shall be doubled in value to a maximum value of R50 000.

E7 TESTING

Not applicable to this tender.

E8 MEASUREMENT AND PAYMENT

E8.1 Basic principles

Except where separate pay items have been measured in the Bills of Quantities, all costs in respect of complying with the EM Specification are deemed to be covered by the sum tendered for complying with the EM Specification.

ANNEXURE A: ENVIRONMENTAL METHOD STATEMENT

CONTRACT:..... **DATE**:.....

PROPOSED ACTIVITY (give title of method statement and reference number from the EMP):

WHAT WORK IS TO BE UNDERTAKEN (give a brief description of the works - attach extra information to ensure accurate description given):

WHERE THE WORKS ARE TO BE UNDERTAKEN (where possible, provide an annotated plan and a full description of the extent of the works):

START AND END DATE OF THE WORKS FOR WHICH THE METHOD STATEMENT IS REQUIRED:

Start Date:	End Date:

[redacted]

HOW THE WORKS ARE TO BE UNDERTAKEN (provide as much detail as possible, including annotated sketches and plans where possible):

Note: please give too much information rather than too little. Please ensure that issues such as emergency procedures, hydrocarbon management, wastewater management, access, individual responsibilities, materials, plant used, maintenance of plant, protection of natural features, etc. are covered where relevant

[redacted]

DECLARATIONS

1) EMPLOYER'S AGENT'S REPRESENTATIVE/ENVIRONMENTAL OFFICER/ENVIRONMENTAL CONTROL OFFICER

The work described in this Method Statement, if carried out according to the methodology described, appears to be satisfactorily mitigated to prevent avoidable environmental harm:

_____ _____

(signed) (print name)

Dated: _____

2) CONTRACTOR

I understand the contents of this Method Statement and the scope of the works required of me. I further understand that this Method Statement may be amended on application to other signatories and that the Employer's Agent's Representative/Environmental Officer/Environmental Control Officer will audit my compliance with the contents of this Method Statement. I understand that this method statement does not absolve me from any of my obligations or responsibilities in terms of the Contract.

_____ _____

(signed) (print name)

Dated: _____

3) EMPLOYER'S AGENT

The works described in this Method Statement are approved.

_____ _____ _____

(signed) (print name) (designation)

Dated: _____

ANNEXURE B: ENVIRONMENTAL SITE INSPECTION CHECKLIST

To be submitted to the Employer's Agent once a week

CONTRACT:..... **DATE**:.....

ENVIRONMENTAL ASPECT	YES/ NO (✓ or X)	COMMENTS
• All new personnel on Site are aware of the contents of the EMP and have been through the environmental awareness course.		
• Contractor's camp is neat and tidy and the labourers' facilities are of an acceptable standard.		
• Sufficient and appropriate fire fighting equipment is visible and readily available in the appropriate places.		
• Waste control and removal system is being maintained.		
• Fences are being maintained.		
• Drip trays are being utilised where there is a risk of spillage.		
• Bunded areas/drip trays are being emptied on a regular basis (especially after rain).		
• No leaks are visible from construction vehicles.		
• Refuelling of vehicles and plant occurs within designated areas, and appropriate refuelling apparatus and drip trays are being used.		
• "No go" areas, natural features, vegetation, etc. have not been damaged.		
• Dust control measures (if necessary) are in place and are effectively controlling dust.		
• Noise control measures (if necessary) are in place and are working effectively.		
• Erosion and sedimentation control measures (if necessary) are in place and are controlling effectively.		
• Material stockpiles are located within the boundary of the Site and are protected from erosion.		
• Other		

Completed by:..... Signed:.....

[redacted]

ANNEXURE C: CONSTRUCTION PERSONNEL INFORMATION POSTER

ENVIRONMENTAL MANAGEMENT DO'S AND DON'TS

Workers & equipment must stay inside the site boundaries at all times

Do not swim in or drink from streams
Do not throw oil, petrol, diesel, concrete or rubbish in the stream
Do not work in the stream without direct instruction
Do not damage the banks or vegetation of the stream

Protect animals on the site
Ask your supervisor or Contract's Manager to remove animals found on site

Do not damage or cut down any trees or plants without permission
Do not pick flowers

Put cigarette butts in a rubbish bin
Do not smoke near gas, paints or petrol
Do not light any fires without permission
Know the positions of fire fighting equipment
Report all fires
Do not burn rubbish or vegetation without permission

Work with petrol, oil & diesel in areas marked for this
Report any petrol, oil & diesel leaks or spills
Use a drip tray under vehicles & machinery
Empty drip trays after rain & do not throw this water into a river

Try to avoid producing dust - wet dry ground & soil

Do not make loud noises around the site, especially near schools and homes
Report or repair noisy vehicles

Use the toilets provided
Report full or leaking toilets

Only eat in demarcated eating areas
Never eat near a river or stream
Put packaging & leftover food into rubbish bins

Do not litter - put all rubbish (especially cement bags) into the bins provided
Report full bins to your supervisor
The responsible person should empty bins regularly

Always keep to the speed limit
Drivers - check & report leaks
Ensure loads are secure & do not spill

Know all the emergency phone numbers

Fines of between R1000 and R5000
Removal from site
Construction may be stopped

Report any breaks, floods, fires, leaks and injuries to your supervisor
Ask questions!

ANNEXURE D: ADDITIONAL ENVIRONMENTAL ISSUES DEEMED TO FORM PART OF THE ENVIRONMENTAL MANAGEMENT PROGRAMME

Listed below are issues pertaining to the environment that form part of the Contract Document. The clause references relate to the **General Conditions of Contract for Construction Works, Third Edition, 2015 (GCC 2015)**. They are listed here to emphasise that they form part of the environmental considerations and requirements for this project. They must be read together with any Contract Specific Data referring thereto in Part C1.2 Contract Data. The comments made below on the various issues are to be taken as explanatory, in so far as environmental matters are concerned, and do not modify the clauses in any way.

1. **Monitoring**

   Clause 3.1.1 makes provision for the Employer's Agent to administer the Contract in accordance with the provisions of the Contract, including the monitoring of any environmental variables.

2. **Health and safety**

   Clauses 3.1.4, 4.3.1, 4.3.2 and 4.10.1 remind the Contractor of his obligations in terms of the Occupational Health and Safety Act (No. 85 of 1993) and Construction Regulations 2003.

   Clause 5.7 of SANS 1200A reinforces these requirements through the observation of proper and adequate safety arrangements.

3. **Employer's Agent's authority to delegate**

   Clause 3.2.4 gives the Employer's Agent the authority to appoint a representative to act as the Environmental Officer (EO) for the Contract. The EO, who shall be responsible for monitoring compliance with the EMP, may be the Employer's Agent's Representative or any other person accountable to the Employer's Agent.

4. **Employer's Agent's instructions**

   Clause 4.2.1 requires that the Contractor comply with the Employer's Agent's instructions on any matter relating to the Works. Moreover, Clause 4.2.2 ensures that the Contractor only takes instructions from the Employer's Agent, the Employer's Agent's Representative or a person authorised by the Employer's Agent in terms of Clause 3.2.4.

5. **Compliance with applicable laws**

   Clause 4.3.1 requires that the Contractor comply with all applicable laws, regulations, etc. in fulfilling the Contract.

6. **Protection of fossils, etc.**

   Clause 4.7.1 requires the Contractor to take reasonable precautions to prevent any person from damaging, *inter alia* anything of geological or archaeological interest, and requires that he inform the Employer's Agent and follows any instructions issued in this regard.

7. **Housing, food and transport**

   Clause 4.10.1 requires the Contractor to make his own arrangements for payment, housing, feeding and transport for his employees, provided that if he uses any part of the Site for such purposes he shall obtain the Employer's Agent's prior approval.

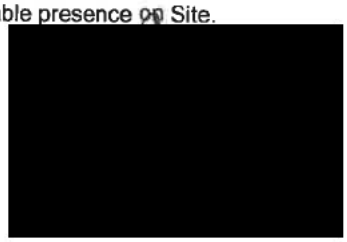
   Clause 4.2 of SANS 1200A further requires that facilities provided comply with local authority regulations and are maintained in a clean and sanitary condition.

8. **Competent employees**

   Clause 4.11.1 requires that all persons employed on Site are careful, competent, and efficient. These attributes embrace knowledge of the environmental matters and issues dealt with in the EMP.

9. **Removal from Site**

   Clause 4.11.2 makes provision for the Employer's Agent to instruct the removal from the Works and Site of any person who is guilty of misconduct, or is incompetent or negligent, or is an undesirable presence on Site.



Clause 7.1.1 requires that all Construction Equipment be in good working order. Accordingly, the Employer's Agent may order that any Construction Equipment not complying with the environmental specifications be removed from Site.

10. **Unacceptable documentation**

Clauses 5.3.1 and 5.3.2 require the Contractor to provide documentation required before commencement with Works execution, failing which the Employer may terminate the Contract. Such documentation includes the Protection of the Environment Declaration provided for in the Contract Document.

11. **Programme and Method Statements**

Clause 5.6.1 makes provision for the Employer's Agent to request the programmes for carrying out the Works.

Clause 5.6.2 makes provision for the Employer's Agent to request statements from the Contractor for the entire scope of the work. In the case of the environmental specifications, these would be submitted as Method Statements.

12. **Hours of operation**

Clause 5.8.1 restricts the Contractors hours of operation to between sunrise and sunset on working days (usually from Monday to Saturday), unless, *inter alia,* permitted by the Employer's Agent in writing.

Clause 5.7.2 further requires that in the event that permission is granted for night work, then such work shall be carried out without excessive noise and disturbance.

13. **Suspension of Works**

Clause 5.11.1 enables the Employer's Agent to suspend the progress of the Works or any part thereof, which may be as a result of some default or breach of the Contract on the part of the Contractor.

14. **Site clean-up**

Clause 5.15.1 requires that, on completion of the Works, the Contractor shall clear away and remove from the Site all Construction Equipment, surplus materials, rubbish and Temporary Works of every kind and leave the whole of the Site and Works clean and in a safe condition. All streams and watercourses shall be restored to the condition as at the commencement of the Works. Should the Contractor fail to do the work upon notice from the Employer's Agent, the Employer may in terms of Clause 7.8.3, employ others to carry out the work and recover the cost of doing so from the Contractor.

15. **Access to the Works**

Clause 7.3.1 makes provision for the Employer's Agent to authorise the Environmental Officer (EO) to have access to the Works and Site.

16. **Pollution prevention and interferences**

Clause 8.1.2 requires that all operations necessary for the execution of the Works be carried out so as not to cause unnecessary noise or pollution, or to interfere unnecessarily or improperly with public services, or the access to, use and occupation of public or private roads and footpaths or properties.

Clause 5.6 of SANS 1200A further requires the Contractor to minimise dust nuisance and pollution of streams and inconvenience to or interference with the public.

17. **Dust**

Clause 8.1.2 requires that all operations necessary for the execution of the Works be carried out so as not to cause unnecessary pollution.

Clause 5.6 of SANS 1200A requires that the Contractor take all reasonable measures to minimise any dust nuisance.

18. **Noise**

Clause 8.1.2 requires that all operations necessary for the execution of the Works be carried out so as not to cause unnecessary noise.

Clause 4.1 of SANS 1200A requires that when working in built-up areas, the Contractor shall provide and use suitable and effective silencing devices for pneumatic tools and other plant that would otherwise cause a noise level exceeding 85dB.

19. **Protection of existing environment**

Clause 8.1.3 requires that the Contractor uses every reasonable means to prevent any roads or bridges to or in the vicinity of the Site being subjected to damage by excessive loads, or disruption due to excessive traffic, occasioned by his transport arrangements.

20. **Reinstatement**

Clauses 8.2 and 8.4 make provision for the Contractor to repair and make good any damage to the Works in his care (other than "excepted risks"), and bear any costs associated with such reinstatement.

21. **Reporting accidents**

Clause 8.5.1 requires the Contractor to report to the Employer's Agent every occurrence on the Site which causes environmental damage.

[redacted]

CITY OF CAPE TOWN
ISIXEKO SASEKAPA
STAD KAAPSTAD

HEALTH AND SAFETY SPECIFICATION

Client: City of Cape Town

Project Name: Term Tender for Laying of New Sewer Mains

Tender No: 83Q/2023/24

[redacted]

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1. SCOPE

1.1 Scope of Specification

This health and safety (H&S) specification is the Client's Health and Safety Specification prepared in accordance with Clause 5*(b)* of the *Construction Regulations 2014*.

This specification covers the principles, duties, responsibilities, liabilities and requirements applicable in respect of health and safety in the construction work to be performed at the *Sewer Replacement Project*. This document constitutes the employer's health and safety specification as defined in the *Construction Regulations 2014* of the *Occupational Health and Safety Act (Act No. 85 of 1993)* and other statutes relevant to the works.

This specification shall only apply to the intended sewer replacement scope of work; and may not apply to other phases of works which may be pursued as part of subsequent contracts to this project. Further, this document may not be exhaustive of all existing health and safety risk considerations; and therefore, it is expected that the specialist service provider/Principal Contractor shall exercise and comply with relevant statutory requirements related to the scope; and industry best practice thereto. Risk items not addressed in this specification document do not absolve the prospective Principal Contractor from complying with applicable requirements relevant to the scope of works.

1.2 Philosophy

This specification has been prepared as a guideline without being prescriptive, constraining the competitive advantage or interfering with the legal obligations of the responding parties.

The specification accordingly provides for:

a) Independent periodic audits to ensure an unbiased pursuit of health and safety,
b) Follow-up audits to ensure the implementation of prescribed remedial actions,
c) The review of the efficiency and effectiveness of the Contractor's Health and Safety Plan
d) The preparation of regular reports of inspections and accidents to enable the tracking of changes in health and safety performance,
e) The monitoring of conditions on a continuously pro-active basis to ensure that hazards are without delay identified, assessed and remedied should it threaten the health and safety of persons and property,
f) Ad-hoc inspections to ensure that health and safety is pursued with dedication and not out of intimidation or coercion, and
g) Development of all aspects of the Contractor's Health and Safety Plan.

The fundamental intention of this specification is the preservation and entrenchment of health and safety as a core value of all involved during the construction.

2. INTERPRETATIONS

2.2 Application

This specification contains clauses that are applicable to the occupational health and safety requirements of the *Occupational Health and Safety Act, 1993* and its Regulations, in particular the *Construction Regulations 2014* promulgated on February 2014 in terms of Section 43 of the Act.

2.3 Definitions

[redacted]

In this document, the following words and expressions shall have the meanings hereby assigned to them except where the context otherwise requires:

(a) "**Assistant Construction Supervisor**" means a competent person appointed in accordance with regulation 8. (2) of the Construction Regulations, 2014, in writing by the Contractor, with written notification to the Employer's Agent.

(b) **"Bulk mixing Plant Supervisor**" means a competent person appointed in accordance with regulation 20. (1) of the Construction Regulations, 2014, in writing by the Contractor, with written notification to the Employer's Agent.

(c) **"Construction Health and Safety Officer"** means a competent person appointed in accordance with regulation 8. (6) of the Construction Regulations, 2014, in writing by the Contractor, with written notification to the Employer's Agent.

(d) **"Construction Manager**" means a competent person appointed on a full-time basis in accordance with regulation 8. (1) of the Construction Regulations, 2014, in writing by the Contractor, with written notification to the Employer's Agent.

(e) **"Construction Vehicles & Mobile Plant Inspector"** means a competent person appointed in accordance with regulation 23. (1)(k) of the Construction Regulations, 2014, in writing by the Contractor, with written notification to the Employer's Agent.

(f) **"Contractor"** means the natural or juristic person or partnership whose tender has been accepted by or on behalf of the Employer and, who is defined as the Principal Contractor in the Construction Regulations, 2014.

(g) **"Demolition Work Supervisor"** means a competent person appointed in accordance with regulation 14. (1) of the Construction Regulations, 2014, in writing by the Contractor with written notification to the Employer's Agent.

(h) **"Employer's Designer"** means the natural or juristic person or partnership named in the Appendix to Tender or any other natural or juristic person or partnership appointed from time to time by the Employer for the design of the portion of the Permanent Works which the Employer is responsible to design in terms of this Contract.

(i) **"Contractor's Designer"** means the natural or juristic person or partnership appointed from time to time by the Contractor and notified in writing to the Employer's Agent and Employer for the design of the portion of the Permanent Works which the Contractor is responsible to design in terms of this Contract, and for the design of the Temporary Works.

(j) **"Electrical Temporary Installation Inspector"** means a competent person appointed in accordance with regulation 24. (d) of the Construction Regulations, 2014, in writing by the Contractor, with written notification to the Employer's Agent.

(k) **"Employer"** means the natural or juristic person or partnership for whom the Works are to be executed, who is named as the Employer in the Conditions of Contract and who is known as the "Client", in the Occupational Health and Safety Act, 1993 and its regulations.

(l) **"Employer's Agent"** means the natural or juristic person or partnership named as the Employer's Agent in the Conditions of Contract and appointed by the Employer to act as the Employer's Agent in terms of this Contract.

(m) **"Employer's Agent's Representative"** means the person appointed by the Employer's Agent in terms of Clause 2 of the Conditions of Contract.

(n) **"Excavation Work Supervisor"** means a competent person appointed in accordance with regulation 13. (1) of the Construction Regulations, 2014, in writing by the Contractor, with written notification to the Employer's Agent.

(o) **"Explosive Powered Tools Issuer"** means a competent person appointed in accordance with regulation 21. (2)(g)(l) of the Construction Regulations, 2014, in writing by the Contractor, with written notification to the Employer's Agent.

(p) **"Fall Protection Developer"** means a competent person appointed in accordance with regulation 10. (1)(a) of the Construction Regulations, 2014, in writing by the Contractor, with written notification to the Employer's Agent.

[redacted]

(q) **"Fire Extinguisher Inspector"** means a competent person appointed in accordance with regulation 29. (h) of the Construction Regulations, 2014, in writing by the Contractor, with written notification to the Employer's Agent.

(r) **"Temporary Works Supervisor"** means a competent person appointed in accordance with regulation 17. (1) of the Construction Regulations, 2014, in writing by the Contractor, with written notification to the Employer's Agent.

(s) **"Hazard"** means any object, action or condition that can potentially harm the health and safety of persons or property.

(t) **"Hazard Identification"** means the identification and documenting of existing or expected hazards.

(u) **"Health and Safety Consultant"** means the natural or juristic person or partnership appointed by the Contractor to assist in any matters related to health and safety on the construction site.

(v) **"Health and Safety Plan"** means a documented plan, prepared by the Contractor, of work procedures to mitigate, reduce or control hazards identified.

(w) **"Health and Safety Specification"** means a documented specification of all health and safety requirements and criteria to mitigate, reduce or control hazards identified.

(x) **"Health and Safety Representative"** means the person/s designated in accordance with section 17 of the Occupational Health and Safety Act.

(y) **"Ladder Inspector"** means a competent person appointed in accordance with regulation 13 of the General Safety Regulations, in writing by the Contractor, with written notification to the Employer's Agent.

(z) **"Material Hoist Inspector"** means a competent person appointed in accordance with regulation. (8)(a) of the Construction Regulations, 2014 in writing by the Contractor, with written notification to the Employer's Agent.

(aa) **"Method Statement"** means a document detailing the key activities to mitigate, reduce or control hazards identified.

(bb) **"Professional Engineer"** means any person employed from time to time by either the Employer or Contractor who holds registration as either a Professional Engineer or Professional Certificated Engineer under the Engineering Profession Act, 2000 (Act No. 46 of 2000).

(cc) **"Professional Technologist"** means any person employed from time to time by either the Employer or Contractor who holds registration as a Professional Technologist under the Engineering Profession Act, 2000 (Act No. 46 of 2000).

(dd) **"Risk"** means the likely occurrence and impact of a hazard.

(ee) **"Risk Assessment"** means a programme carried out to identify and evaluate the likely occurrence and impact of all hazards.

(ff) **"Risk Assessor"** means a competent person appointed in accordance with regulation 9. (1) of the Construction Regulations, 2014, in writing by the Contractor, with written notification to the Employer's Agent.

(gg) **"Safety Agent"** means a competent natural or juristic person or partnership named in the Appendix to Tender or any other person appointed from time to time by the Employer and notified in writing to the Contractor to act on behalf of the Employer for the purposes of this specification.

(hh) **"Scaffolding Supervisor"** means a competent person appointed in accordance with regulation 16. (2) of the Construction Regulations, 2014, in writing by the Contractor, with written notification to the Employer's Agent.

(ii) **"Stacking Supervisor"** means a competent person appointed in accordance with regulation 28. (a) of the Construction Regulations, 2014, in writing by the Contractor, with written notification to the Employer's Agent.

(jj) **"Subcontractor"** means the natural or juristic person or partnership who is appointed by the Contractor with prior consent of the Employer's Agent to execute certain tasks associated with the Works and who is also an employer as defined in section 1 of the Occupational Health and Safety Act.

[redacted]

(kk) **"Suspended Platforms Supervisor"** means a competent person appointed in accordance with regulation 17. (1) of the Construction Regulations, 2014, in writing by the Contractor, with written notification to the Employer's Agent.

2.4 Purpose of health and safety specifications

The purpose of the Health and Safety specification is to assist with the achievement of compliance with the OHS Act, and in particular with the Construction Regulations 2014, so as to effectively mitigate risks on the project. The health and safety specification enables Tenderers intending to bid to make adequate financial provisions in their tenders to cover the health and safety requirements of the project and thereafter, for the Contractor and his sub-contractors to use as the basis for the preparation of the construction phase Health and Safety Plan.

This Health and Safety Specification document sets out the specific requirements to be met by the Contractor and all sub-contractors so that the health and safety of all persons potentially at risk may receive a priority at least equal to the other facets of the project.

2.5 Supporting specifications

Where this health and safety specification document does not expressly indicate, the following regulatory specifications shall be deemed, inter alia, form part of health and safety requirements to which the appointed Principal Contractor must be fully conversant and comply with. These will be:

- Construction Regulations, 2014.
- General Safety Regulations
- General Administrative Regulations
- Driven Machinery Regulations, 1988,
- Electrical Installation Regulations, 1992,
- Electrical Machinery Regulations, 1988,
- Environmental Regulations for Workplaces, 1987
- Facilities Regulations, 1990.
- Hazardous Chemical Substances Regulations 1995, and
- Relevant SANS Standards

3. MINIMUM ADMINISTRATIVE REQUIREMENTS

As enshrined in the Occupational Health and Safety Act 85 of 1993, the Principal Contractor will be expected to comply with the following health and safety administrative requirements:

3.1 Notification of Intention to Commence Construction Work

On receipt of the Client's notification of award of the contract and, in any event before any construction work commences, the Principal Contractor shall notify the Provincial Director of the Department of Labour in writing of the intention to undertake construction work. Annexure A to the Construction Regulations must be used for that purpose and a copy of that form is attached as Annexure A to this specification. A copy of the completed notification must be forwarded to the Client and to the Employer's Agent and a copy shall be attached to the Health and Safety Plan. The addresses of the nine Provincial Directors of the Department of Labour are given in Clause 1 of the *General Administrative Regulations* to the OHS Act.

3.2 Assignment of the CEOs' Responsibility for Health and Safety

[redacted]

In terms of Section 16(1) of the Act, the CEO's of the Client, the Employer's Agent, the Principal Contractor and all other Contractors shall make the requisite assignments of their responsibilities in writing prior to commencement of work on site. It is noted that, in a large organization, the CEO may decide to assign his responsibilities to a line manager who may in turn assign his responsibilities to another line manager and so on.

3.3 Appointment of the Construction Supervisor

The Principal Contractor's CEO (or his duly assigned employee) shall appoint (in writing) a full-time competent person to supervise the construction work. One or more competent persons may also be appointed (in writing) to assist the appointed construction supervisor should the Principal Contractor deem it necessary or desirable. The Principal Contractor's and the Contractors' competent persons for the various roles shall fulfil the criteria as defined in the *Construction Regulations 2014*. Copies of these appointments, together with proof of competence of the individuals concerned, shall be attached to the Health and Safety Plan. Proof of competencies shall take cognisance of the definition of a "competent person" as set out in the *Construction Regulations* and may comprise CV's and written motivations/recommendations by the persons' direct report.

3.4 Compensation of Occupational Injuries and Diseases Act 130 of 1993 (COIDA)

The Principal Contractor shall, prior to commencing work on site, submit a Letter of Good Standing with its Compensation Insurer to the Client and to the Employer's Agent as proof of registration. All other Contractors shall submit their proof of registration to the Principal Contractor before they commence work on site. Copies of these documents shall be attached to the Health and Safety Plan.

3.5 Occupational Health and Safety Policy

The Principal Contractor and all other Contractors shall submit to the Client and to the Employer's Agent, a copy of their organisation's H&S Policy signed by their Chief Executive Officer. Each policy must include a description of the organisation and state the Health and Safety objectives and how they will be achieved and implemented by the organisation. Copies of these policies shall be attached to the Health and Safety Plan. During the construction phase, these policies must be displayed conspicuously on site where employees report for duty. In addition, all employees must be inducted on the policy(is).

3.6 Health and Safety Organogram

The Principal Contractor shall submit an organogram, outlining the Health and Safety site management structure, including those of all other Contractors. In cases where appointments have not been made, the organogram shall reflect the intended positions, and the names shall be filled in as and when the appointments are made. The organogram shall be updated whenever there are any changes in the site management structure and/or personnel. A copy shall be attached to the Health and Safety Plan.
In the duration of the construction phase, the Principal Contractor shall keep a "live" legal appointments register, which shall be updated as necessary and submitted to the Employer's Agent on a monthly basis.

3.7 Appointment of a Health and Safety Officer

In view of the criticality and risk-sensitivity of the project, the appointed Principal Contractor shall procure the services of a Construction Health and Safety Officer for the duration of the contract.

The Construction Health and Safety Officer, herein referred, shall assume advisory and monitoring duties on the project to primarily drive health and safety; and custodianship of health safety documentation and administration on site.

[redacted]

The CV's, qualifications and relevant professional registrations shall be attached as part of the Health and Safety Plan.

The approval of the Construction Health and Safety shall be in consultation with the client (or his appointed Agent) as part of the Health and Safety Plan approval process.

3.8 Health and Safety Representative(s)

The Principal Contractor and all other Contractors shall, after due consultation with the parties concerned, ensure that a Health and Safety Representative is appointed in writing as soon as there are 20 persons employed on a site. Additional Health and Safety Representatives are required once the workforce exceeds 50 persons. Copies of the appointments are to be attached to the Health and Safety Plan. Each Health and Safety Representative is to be trained to carry out their respective functions and must carry out regular inspections, keep records, and report all findings to the responsible person forthwith, and also at the Health and Safety Committee meeting. Copies of these documents are to be kept in the Project Health & Safety File.

3.9 Health and Safety Committees

Provided that two or more Safety Representatives have been designated, the Principal Contractor shall ensure that at least one Health and Safety Committee is established and that Health and Safety Committee meetings are held at least monthly and that minutes are kept on record. Meetings must be convened and chaired by the Principal Contractor's Construction Manager. All of the Principal Contractor's and other Contractors' responsible persons and H&S Representatives shall attend the monthly H&S meetings. Contractors shall also have their own internal H&S committees as required in terms of the OHS Act and copies of their agendas and minutes of their meetings shall be forwarded to the Principal Contractor on a monthly basis. Copies of all H&S committees' agendas, attendance registers and minutes are to be kept in the Project Health and Safety File.

3.10 Health & Safety Audits, Monitoring and Reporting

The Health and Safety Consultant, appointed by the Client, shall conduct monthly Health and Safety audits of the construction work operations including a full audit of physical site activities as well as an audit of the administration of health and safety. The Principal Contractor is obligated to conduct similar audits on himself and Contractors that they have appointed. It is advisable that the Principal contractor appoints an Auditor/SHE Manager from their head office. Detailed reports of the audit findings shall be reported on at all levels of project management meetings/forums. Copies of all audit reports shall be kept in the Project Health and Safety File.

3.11 Emergency Procedures

The Principal Contractor shall prepare a detailed emergency procedure prior to commencement of work on site and it shall be included in, and form part of the Health and Safety Plan. The procedure shall be updated whenever changes occur and it shall detail the emergency response plans.

The Emergency Plans/Procedures must be compiled in careful consideration and assessment of the physical site and the baseline risk assessment.

The emergency procedures shall, but not be limited to the following key elements:

- List of key competent personnel on site;
- Details of the nearest emergency services, including their physical addresses and phone numbers;
- Probable Emergency Register and actions or steps to be taken in the event of each specific type of probable emergency;

[redacted]

- Information on hazardous materials/situations that may be encountered on site.

The Emergency Plan must also indicate applicable methods on how casualties will be evacuated from site for further stabilization and treatment.

Emergency procedures shall include, but shall not be limited to, fire, spills, accidents to employees, use of hazardous substances, bomb threats, major incidents/accidents and social unrests.

A contact list of all service providers (Fire Department, Ambulance, Police, Medical and Hospital, etc.) must be maintained and be readily available to site personnel at all times i.e. it must not be located in an area which may be inaccessible outside of normal working hours.

The Principal Contractor shall advise the Client and the Employer's Agent in writing forthwith, and thereafter at the project Health and Safety meetings, of any emergencies that occurred, together with a record of the action taken. Copies of all reports on emergencies shall be kept in the Project Health and Safety File.

3.12 Accident / Incident Reporting and Investigation

Each Injury that occurs is to be categorized *into near-miss/near-hit*, *first aid*, *medical treatment injury*, *disabling*, or *fatal* and must be reported on the prescribed form. The Principal Contractor must document in its construction phase Health and Safety Plan how it will handle each of these categories of injury. When reporting injuries to the Client, these aforementioned categories shall be used. All injuries shall be investigated by the Principal Contractor, with a report being forwarded to the Client forthwith. All Contractors have to report on the four categories of injuries to the Principal Contractor at least monthly. The Principal Contractor must report all injuries to the Client in the form of a detailed injury report at least monthly and copies of these reports shall be kept in the Project Health and Safety File.

Appropriate forms must be used to report injuries to the Department of Labour on the WCL 2 forms, as appropriate.

3.13 General Record Keeping

The Principal Contractor and all Contractors shall keep and maintain health and safety records to demonstrate compliance with this specification, the approved Health and Safety Plan, the OHS Act, and the Regulations. The Principal Contractor shall ensure that all records of incidents/accidents, training, inspections, audits, etc. are kept in the Project H&S File stored in a suitable place on site. The Principal Contractor must ensure that every Contractor opens its own H&S file, maintains the file, makes it available to the Principal Contractor and other authorised persons on request; and sends copies of the relevant documentation to the Principal Contractor.

The Principal Contractor shall maintain an up to date register of each Contractor engaged in construction work on site giving the Contractors' name and the Responsible Persons' contact details and the number of employees on site. As these details may be subject to frequent change, the register must be updated at least weekly. The register is to be available for inspection; and must be submitted monthly to the Client.

3.14 Project Health and Safety File

The Principal Contractor shall prepare, and update on at least on a monthly basis, a properly indexed Health and Safety File for the project. This file will evolve during the construction phase and is to be handed over to the Client on completion of the construction work on site. The Project Health and Safety File shall contain:

[redacted]

- The names and addresses and contact details of the Principal Contractor
- The names and addresses of all other Contractors that work on the project, copies of their agreements with the Principal Contractor and the type of work that each one is carrying/has carried out.
- The original and all subsequent versions/revisions of the Health and Safety Plan and the Annexures and Appendices thereto.
- All information specifically called for in the OHS Act and the Construction Regulations and this specification and any other pertinent information relating to health and safety on the project that is considered relevant.
- The geo-science report, design loadings of the structure(s) and methods and sequence of construction issued to the Principal Contractor by the Employer's Agent and/or the Client, where applicable.
- The safe work procedures/Method Statements developed by the Principal Contractor and all other Contractors.
- Details of any special or unusual materials forming part of the completed works.
- All relevant information concerning the completed works. This information shall comprise the record/"as built" drawings prepared by the Employer's Agent, copies of which will be issued to the Principal Contractor for inclusion in the File, and the operating and maintenance instructions and all relevant information relating to any unusual or special features of the completed works that could affect health and safety of the end users. When compiling this data, consideration must be given to all information that may be relevant to possible future alterations and/or demolition of all or part of the works.

4. HEALTH AND SAFETY INDUCTION, TRAINING AND EQUIPMENT

4.1 Health and Safety Induction, Awareness and Competency

4.1.1 Induction of Site Personnel

The Principal Contractor shall ensure that all site personnel, including those of all other Contractors, undergo **risk-specific** H&S induction training before starting work. A record of attendance at every induction session shall be kept in the Project Health and Safety File. A risk-specific induction manual must be compiled by the Principal Contractor, on which all entry inductions will be based. A suitable venue must be made available by the Principal Contractor to accommodate this training.

4.1.2 Awareness of Site Personnel

The Principal Contractor shall ensure that periodic 'toolbox talks' take place on site. These talks should deal with risks relevant to the construction work at hand. The Principal Contractor and all Contractors shall conduct 'toolbox' talks daily with their own employees. A record of attendance at each 'toolbox talk' shall be kept in the Project Health and Safety File.

4.1.3 Competency of Site Personnel

All competent persons shall have the knowledge, experience, training, and qualifications specific to the work they have been appointed to supervise, control and/or carry out. This will have to be assessed on a regular basis by, for example, periodic H&S audits, progress meetings, etc. The Principal Contractor will be responsible for ensuring that only competent Contractors are appointed to carry out specific tasks.

4.2 Public and Site Visitor Health & Safety

Both the Client and the Principal Contractor have a duty in terms of the OHS Act to do all that is reasonably practicable to prevent members of the public and site visitors from being adversely affected by the construction activities.

[redacted]

The Principal Contractor shall ensure that every person working on or visiting the site, as well as the public in general, shall be made aware of the dangers likely to arise from site activities, including the precautions to be taken to avoid or minimize those dangers. Appropriate H&S notices and signs shall be posted up, but this shall not be the only measure taken.

Site visitors must be briefed on the hazards and risks they may be exposed to and what measures are in place or should be taken to control these hazards and risks. A record of these inductions/briefings shall be kept in the Project H&S File.

4.3 First Aid Boxes and First Aid Training

The Principal Contractor and all other Contractors shall appoint First Aider(s) in writing. All Contractors with more than 10 employees shall have a trained, certified First Aider on site at all times. The appointed First Aider(s) are to be sent for accredited First Aid training. Copies of the valid First Aid certificates for each First Aider are to be kept in the Project H&S File. The Principal Contractor shall provide an on-site. First Aid Station with First Aid facilities, including first aid boxes adequately stocked at all times. All Contractors with more than 5 employees shall supply their own first aid box(es).

4.4 Alcohol and other Drugs

Alcohol and drug/other substance abuse have been shown to be a problem in the construction industry. No alcohol or other drugs will be allowed on site. No person may be under the influence of alcohol or any other drugs while on the construction site. Any person on prescription drugs must inform his/her superior, who shall in turn report this to the Principal Contractor forthwith. Any person suffering from any illness/condition that may have a negative effect on his/her safety performance must report this to his/her superior, who shall in turn report this to the Principal Contractor forthwith. Any person suspected of being under the influence of alcohol or other drugs must be sent home immediately, to report back the next day for a preliminary inquiry. A full disciplinary procedure must be followed by the Contractor concerned and details of the disciplinary action taken must be forwarded to the Client for his records.

4.5 Personal Protective Equipment (PPE) and Clothing

The Principal Contractor shall ensure that all workers are issued with and wear, ***hard hats***, ***reflective vests***, ***steel-toe safety shoes***, ***Safety glasses*** and specific PPE wherever such equipment is identified in the SWP's, Method Statement or Risk Assessments as being necessary for particular tasks. Personal Protective Equipment (PPE) indicated in *italic* shall be standard and mandatory to all entering the works area. The Principal Contractor and all other Contractors shall make provision for; and keep adequate quantities of SABS approved PPE on site at all times. The Principal Contractor shall clearly outline in the Health and Safety Plan the procedures to be taken when PPE or clothing is lost, stolen, worn out, or damaged. This procedure applies to all Contractors, as they are all Employers in their own right.

4.6 Fire Extinguishers and Fire Fighting Equipment

The Principal Contractor and all other relevant Contractors shall provide adequate, regularly serviced firefighting equipment located at strategic points on site, specific to the classes of fire likely to occur. The appropriate notices and signs must be posted up as required.

4.7 Occupational Health and Safety (OHS) Signage

The Contractor shall provide adequate on-site Health and Safety signage including, but not limited to, *'no unauthorized entry'*, *'report to site office'*, *'site office'*, *'beware of overhead work'*, *'hard hat area'*, *'beware: moving machinery'* and *"Workmen above'*. Signage shall be posted up at all entrances to site as well as on site in strategic locations e.g. access routes, power-lines, scaffolding, and other potential risk areas/operations.

5. PRELIMINARY HAZARD IDENTIFICATION AND RISK ASSESSMENT AND PROGRESS HAZARD IDENTIFICATION AND RISK ASSESSMENT; AND SAFE WORK PROCEDURES

5.1 Hazard Identification & Risk Assessment (HIRA)

This section of the specification provides guidelines for the Principal Contractor in preparation of risk assessments in order to ensure compliance with Regulation 7 of the *Construction Regulations 2014*. This section highlights the principles related to the preparation of suitable and sufficient risk assessments. Principal Contractor staff intending to prepare risk assessments should be trained and suitably experienced in the application of risk assessments principles.

A suitable and sufficient risk assessment is an assessment which:

- Accounts for risks that are likely to arise during the construction of the works,
- Enables the development and implementation of systems to manage the risks,
- Remains valid for a reasonable period of time,
- Provides a basis for training of employees, and
- Improves working procedures and introduce long term controls.

The requirements of the *Construction Regulations* will not be satisfied by a single risk assessment exercise that holds good for all time. The risk assessment process on the works shall be an ongoing process.

The objectives of risk assessments are to:

- Identify the risks that are mostly in need of reduction,
- Identify the various options for achieving such reduction,
- Identify the risks that require careful ongoing management, and
- Identify the nature of the required ongoing attention.

5.2 Forms of Risk Assessment

In order to ensure compliance with the Construction Regulations, the Principal Contractor will be required to carry out the following three forms of risk assessment:

5.2.1. Baseline risk assessments

The Principal Contractor will be required carry out a risk assessment before the commencement of construction activities on the works. This baseline risk assessment will form part of the Contractor's Health and Safety Plan. The risks and hazards to which persons, plant, vehicles and facilities may be exposed during the construction of the works should be identified and evaluated. Measures to reduce or control these risks or hazards should be defined during this assessment. The effectiveness of the measures defined and the baseline risk assessment prepared shall be monitored and reviewed from time to time to ensure that it remains relevant and accurate.

5.2.2 Issue-based risk assessments

The Contractor will be required to carry out separate risk assessments during constructio the works when methods and procedures are varied, for example when:

[redacted]

- Designs are amended,
- New machines are introduced,
- Plant is periodically cleaned and maintained,
- Plant is started-up or shut-down,
- Systems of work change or operations alter,
- Incidents or near-misses occur, or
- New tasks

5.2.3. *Continuous risk assessments*

The *Occupational Health and Safety Act* specifically requires that employers shall provide and maintain working environments that are safe and without risk to health. The general awareness of hazards needs to be raised as work ethic to maintain a safe and risk-free environment on an ongoing basis. This is achieved by continuous risk assessments, the most important form of risk assessment that takes place as an integral part of day-to-day management. Examples of continuous risk assessments include:

- Regular audits,
- Maintaining general hazard awareness,
- Pre-work risk assessment

5.3 Methodology for the Preparation of Risk Assessments

The Principal Contractor shall in the preparation of his risk assessments, follow the following general principles:

- Employ a team of suitably qualified individuals with appropriately varied and relevant experience in risk assessment,
- The appointed risk assessor shall lead the risk assessment,
- Provide the team with background data, scope of work, potential hazards and underlying causes, and
- Where necessary, co-opt expert personnel for complex risk assessments and aspects of risk assessments that require expert judgment,
- Institute an ongoing system of identifying aspects of the work that require risk assessment, and
- Conduct risk assessments in workshops of the team or by individual members of the team under guidance of the leader as appropriate to the situation.

5.4 Elements of a Risk Assessment

5.4.1 General

The process of carrying out a risk assessment consists of a number of well-defined steps. These steps improve decision-making by providing a greater understanding of the risks and their impacts. The main steps or elements of the risk assessment process are as follows:

a) Consider scope and nature or risks involved, determine purpose and physical and legal bounds of assessment and define risk evaluating criteria,
b) Systematically identify risks,
c) Analyze risks with regard to causes, likelihood of occurrence and possible consequences against the background of existing controls and its effectiveness,
d) Evaluate risks in terms of pre-established criteria to determine need and priority for attention.

e) Treat risks through a process of risk elimination, substitution, controlling risk at source, risk mitigation such as training and as far as risk remains, provide personal protective equipment (PPE),
f) Monitor and review progress and performance in terms of management system, and
g) Communicate and consult.

The following sections 4.4.2 to 4.4.7 deal with items (2) to (7) above. These items form the continuing process of the risk assessment as indicated in Figure 1, below.

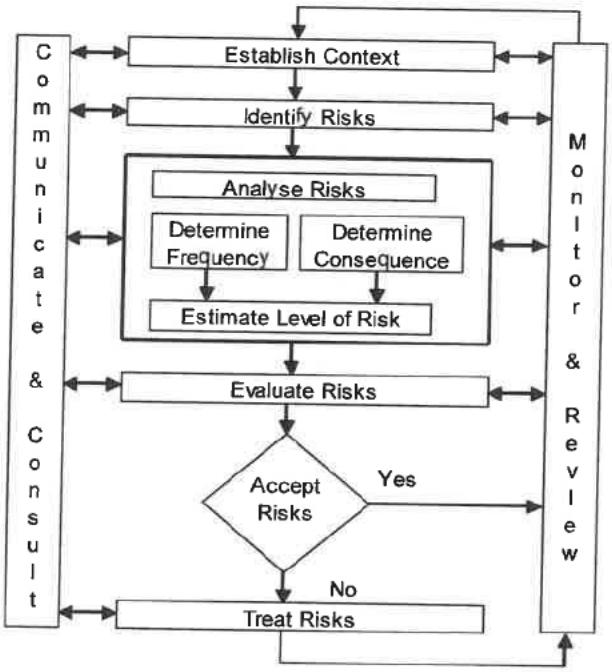


Figure 1: Risk Management Process

The Principal Contractor shall ensure that the risk assessment compiled as part of his Health and Safety Plan contains at least these items.

5.4.2 Risk Identification

The Contractor should regard this step of the risk assessment as the most important. Subsequent analysis and evaluation of risks and the development of risk control measures are wasted if the risks or hazards on the Works are not carefully identified.

The Contractor should bear the following principles in mind when identifying the risks:

i) Systematically address all risks or hazards on the Works,
ii) Review all aspects of the work, but consider only those that have a potential to cause harm,
iii) Rank the risks identified in order of importance and then use appropriately advanced techniques to deal with major risks,
iv) Deal mainly with major risks and don't obscure these with unimportant information, especially minor risks,
v) Address what actually happens in the workplace during the work activity
vi) Consider all persons that may be affected,
vii) Highlight those groups and individuals who may particularly be at risk, and
viii) Review the adequacy and effectiveness of existing safety controls and measures

[redacted]

5.4.3 Risk Analysis

In this step, the Contractor will be required to analyze the risks identified by determining each risks frequency and magnitude or severity of the consequence of the risk or hazard.

The frequency of occurrence of a hazard may be expressed as the number of times that it may occur in a year, decade, lifetime, century, or longer period, according to comparative human experience. The magnitude of the likely consequence of a hazard may be expressed in terms of the degree of incapacitation, number of people or costs involved. The frequency of occurrence of a hazard and the magnitude of its consequence may be compounded as the risk that it poses as shown in the "risk matrix" in Figure 2 below.

Frequency of Occurrence of Hazard	Severity of Consequences of Potential Hazard					
	1 Medically treatable injury	1 Compensable injury	10 Compensable injuries	1 Permanently disabling injury	1 Fatality	10 Fatalities
Frequent; 1 or more occurrences per year	Medium	High	Very high	Severe	Severe	Severe
Several times during a career; 0.1 occurrences per year	Medium-low	Medium	High	Very high	Severe	Severe
Unlikely, but possible during a career; 0.01 occurrences per year	Low	Medium-low	Medium	High	Very high	Severe
Very unlikely during a career; 0.001 occurrences per year	Low	Low	Medium-low	Medium	High	Very high
Barely credible; 0.0001 occurrences per year	Low	Low	Low	Medium-low	Medium	High

Figure 2: Compounded Risk Matrix

The columns in the table represent the likely consequence of the hazard and the rows, the frequency of occurrence. The risks evidently range from low to severe. Note that diagonals in the matrix represent the risks of the identified hazards, taking the effectiveness of controls into consideration.

The table represents a typical risk matrix that need not necessarily be adopted by the Contractor. The Contractor may use an alternative risk matrix provided that it is approved as part of his Health and Safety Plan.

5.4.4 Risk Evaluation

In this step, the Principal Contractor will be required to compare the assessed risk with similar risks previously experienced for the purpose of deciding how to treat the risk. A useful systematic approach for this purpose is as follows:

- If the assessed risk exceeds similar risks that have occurred in the past and that are considered to be unacceptable, the assessed risk would require treatment depending upon its magnitude as discussed in Section 4.4.5, or
- If the assessed risk exceeds similar historical risks that are acceptable, treatment of the assessed risk will depend on the extent by which it exceeds the historical risks, or
- If the assessed risk is less than historical risks that are unacceptable, treatment of the assessed risk will depend on the extent by which it is less than the historical risks, or
- If the assessed risk is less than historical risks that are acceptable, the assessed risk would also be acceptable and would not require any treatment.

5.4.5 Risk Treatment

In this step, the Contractor will select and implement appropriate measures for dealing with [redacted]
Typically measures comprise the following:

[redacted]

- Elimination by changing designs, procedures, management methods, etc., applicable to high frequency–high consequence risks, or
- Reduction by changing designs, procedures, management methods, etc., applicable to high frequency–high consequence risks, or
- Minimization by changing designs, procedures, management methods, etc., applicable to high frequency–low consequence risks, or
- Transfer or share whole or part of the risk to another party by insurance, contractual arrangements or organizational structures, applicable to low frequency–high consequence risks, or
- Control to ensure that risks do not increase, applicable to low frequency–high consequence risks, or
- Retention together with provision of monitoring and personal protective equipment, applicable to low frequency–low consequence residual risks after reduction, or
- Acceptance without particular action other than provision of personal protective equipment, applicable to low frequency–low consequence risks.

The following principles enable the optimum treatment to be determined:

- Avoid risks altogether if possible by using different approaches, substances or methods of work,
- Combat risks at source rather than by adopting secondary measures,
- Adapt work to the individual rather than the individual to the work, that is, in the design consider the people and their attributes that will operate the system
- Take advantage of technological and technical progress,
- Risk prevention measures must be part of a coherent policy and approach to safety management that involves performance measurement, goal setting, feedback and analysis,
- Give preference to measures that protect the whole work force,
- Ensure that those for whom protection is provided understand what they need to do to make sure that the protection works, and
- Ensure that measures to control risks are an accepted part of an active health and safety culture supported by all levels of the organization; single risk reduction initiatives invariably fail.

5.4.6 Monitoring and Review

It is necessary to monitor risks, the effectiveness of the risk treatment plan and the strategies and management system set up to control implementation. Control of the risk management program entails the setting of standards, monitoring actual performance, comparing the performance with the standards and correcting any deviations from the standard. Risks and the effectiveness of the control measures need to be monitored to ensure changing circumstances do not alter risk priorities. Few risks remain static.

Ongoing review is essential to ensure that the management plan remains relevant. Factors that affect the likelihood and consequences of an outcome may change, as may factors that affect the suitability or cost of the various treatment options. If an accident occurs, or if more is learnt about the hazards in the workplace, the risk assessment may need to be reviewed or modified. Hazards may be observed that have not been anticipated or previously identified and which may require appropriate measures to be taken. After an accident has occurred, it is important to determine whether it was predicted, whether preventive measures were identified, and if so, why they did not work, whether the risk assessment is still suitable and sufficient if it failed to predict the accident, whether to the decision to accept a predicted risk as tolerable is still valid, why the accident occurred and what should be done to prevent similar accidents occurring again. It is therefore neces[redacted] regularly repeat the risk management cycle, the time between reviews being dependent [redacted]

nature of the risks and the degree of change likely to take place in the work activity. Review is an integral part of the risk management treatment plan.

5.4.7 Communication and Consultation

The Contractor will be required to communicate and consult with internal and external stakeholders during each step of the risk assessment process. Stakeholders will include all employees.

Effective communication will ensure that those responsible for implementing the risk management process and those with a vested interest, understand the basis on which decisions are made and why particular actions are taken. It will also ensure that the perceptions of all those involved are noted and accommodated during the process.

6. PROJECT-SPECIFIC HEALTH AND SAFETY REQUIREMENTS

6.1 Exposure to Biological Agents

Employees shall be exposed to sewage material. Sewage material may contain biological agents which may give rise to illnesses when contacted. It is therefore imperative that the Principal Contractor ensures that all exposed employees undergo *Tetanus* vaccinations before commencement on site.

6.2 Exposure to noxious gases

The execution of the rehabilitation project shall have potential release of noxious gases from the sewer lines. Such gases may include *Methane*; amongst others.
The Principal Contractor shall ensure that employees are not adversely affected by noxious gases. The following are compulsory preventive measures that must be undertaken as precautionary measures:

a. Manholes where employees shall be working must be opened at least 2 hours before accessing the manholes. This shall ensure that all noxious gases are released to the atmosphere.

b. Before accessing man-holes, the Principal Contractor shall ensure that Confined Space health and safety requirements are adhered to.

c. Before accessing man-holes, the Principal Contractor shall conduct air monitoring test to test for presence of noxious gases. No employee shall be allowed to access manholes without this testing. Where tests reveal presence of noxious gases, employees shall not access the manholes.

d. The Principal Contractor shall further conduct hourly testing where employees are working continuously for more than an hour.

6.2 Transportation and Rigging of pipes

6.2.1 Lifting machines and tackle

The principal contractor and all contractors shall ensure that lifting machinery and tackle is inspected before use and thereafter in accordance with the Driven Machinery Regulations and the *Construction Regulations (Section 22)*. There must be competent lifting machinery and tackle inspector who must inspect the equipment daily or before use, taking into account that:

- All lifting machinery and tackle has a safe working load (SWL) clearly indicated;
- Regular inspections and servicing is carried out;
- Records are kept of inspections and of service certificates;

- There is proper supervision in terms of guiding the loads that includes a trained Rigger/Banks-man to direct lifting operations and check/inspect lifting tackle;
- A record of such inspections must be kept on the site Health and Safety file.
- The operators are competent as well as physically and psychologically fit to work and in possession of a medical certificate of fitness, which shall be available on site.
- Equipment such as slings, ropes, chains an pipe lifting clamps shall be in good condition, with no excessive wear and corrosion being evident. A designated competent person shall examine such equipment on a weekly basis.
- The lifting device shall be fitted with an arresting device, which locks the drum in the event of an engine failure.
- Hooks shall be fitted with a locking device to prevent the rope/sling/chain from being able to slip off the hook.
- Lifting cranes must be fitted with anti-two blocks.

6.2.2 Construction Vehicles

The principal contractor shall ensure that all persons in its employ, all contractors, and all those that are visiting the site are aware and comply with the site speed restriction(s). Separate vehicle and pedestrian access routes shall be provided, maintained, controlled, and enforced.

The Principal Contractor shall ensure that all necessary road signage, vehicle control mechanisms, Flagmen and other traffic accommodation requirements are strictly adhered to for the whole duration of the project.

"Construction Plant" includes all types of plant including but not limited to, cranes, piling rigs, pay loaders, excavators, road vehicles, tractor loader backhoe (TLB), and all lifting equipment. The principal contractor and all relevant contractors shall inspect and keep records of inspections of the construction plant used on site. Only authorized/competent persons are to use machinery and such operations must be under proper supervision.

All construction plant operators shall be in possession of valid medical certificates of fitness issued by an accredited occupational health practitioner to prove they are physically and psychologically fit to operate such machinery.

The principal contractor shall ensure that all hired plant and machinery used on site is safe for use. The principal contractor shall ensure that operators hired with machinery are competent and that certificates (competence and medical) are kept on site in the health & safety file. All relevant sub-contractors must ensure the same. Under no circumstances should persons be transported as passengers of a construction vehicle/plant, unless it is for construction work purposes and a suitable safe seating is provided in the machine.

All construction vehicles involved in this project shall have rotating lights, full-functioning reverse alarms, and a black-on-yellow background sticker or similar; clearly printed *"Construction Vehicle"* on the rear.

Where construction vehicles interface with public motorists and pedestrians, proper care and control must be exercised by the contractor by means of Flagmen or as deemed necessary.

Particular care and extreme caution must be taken where access haul roads to site area traverses live rail crossings. Control signaling and must be observed and adhered to when traversing rail crossings.

6.3 Excavation for pipe-laying

The Principal Contractor shall be expected to excavate a pipe trench from the main valve ch
along the indicated route.

[redacted]

The Principal Contractor shall therefore familiarize himself and comply with the requirements as set out in the *Construction Regulations 2014* – Section 13: **Excavations.**

The Principal Contractor shall also determine any underground services that may exist along the pipe route, in conjunction with the Employer's Agent, before commencing with excavations as per applicable way-leaves.

It is therefore imperative that the Contractor exercises extreme caution in relation to public safety. Therefore, the contractor shall adhere to the following

a) Minimize period by which excavations are left open before back-filling.
b) Open trenches must be barricaded by means of a sturdy orange netting

6.4 Overhead Power Lines

Where live overhead power-lines exist, the Principal Contractor must ensure safety of personnel by establishing monitoring and supervision around these areas. A clearance of 3.5 metres must be maintained at all times from all overhead power-lines. This is to avert accidental electrocution and effects of the electro-magnetic fields of the power-lines.

6.5 Public Safety

The project occurs within the City of Cape Town Municipal area. Most of the residents commute to work via train transportation and own vehicles. Also, unemployment is also a factor which contributes to presence of people in the area, normally on foot. It is therefore imperative for the appointed Principal Contractor to ensure that all work areas are secured; and dangerous work areas properly demarcated or barricaded as appropriate.

Appropriate actions shall be taken by the Principal Contractor to further minimize risks to the public which may emanate in pursuance of the works.

Where the ground is opened for laying of pipes, the Principal Contractor shall ensure that appropriate barricading is installed.

6.6 Pipe-Laying Operations

The Principal Contractor shall conduct rehabilitation of the water line by means of open cut Pipe-Laying method. It shall be the responsibility of the Principal Contractor to ensure that equipment used for this process is in good and safe operational condition. A Method Statement for this process shall be compiled by the Principal Contractor to detail the sequence of activities and appropriate health and safety considerations.
Further, a risk assessment shall accompany the Method Statement.
The Method Statement shall be submitted to the Employer's Agent for approval before commencement of the pipe-laying process.

6.7 Commissioning of New Pipe

Completion and approval of the new pipe shall be done by the Employer's Agent, after he has satisfied himself that all components have been properly assembled for commissioning. All commissioning to be completed and given a go-ahead by the Employer's Agent in writing.

6.8 Fire risk and burning

[redacted]

The construction site in densely vegetated by flora, which may easily burn into the residential areas. The risk of fire is also compounded and exacerbated by the dry and windy winter season.

Burning or making of fires on site shall not be permitted, unless authorized in writing by the Employer's Agent.

The Principal Contractor shall ensure that the risk of fire at any location on the site is eliminated at all times.

The Principal Contractor shall supply fire-fighting equipment in proportion to the fire risks presented by the type of work and other on-site activities and materials used on site. These units shall be kept in good operating order.

No fires will be allowed on the construction site.

Any welding or other sources of heating of materials must be done in a controlled environment and under appropriate supervision, in such a manner as to minimize the risk of veld fires and/or injury to staff, pedestrians, motorists and visitors.

6.8.1 Pipes

The Principal Contractor shall comply with Section 9 of the General Safety Regulations, with regards to the welding, flame cutting, grinding, soldering or similar operations associated with pipework.

6.8.2 Use and temporary storage of flammable liquids on construction sites

This section of the specification shall be read in conjunction with the provisions for the use and storage of flammable goods as determined in the General Safety Regulations.

The Contractor shall with reference to Regulation 25: Use and temporary storage of flammable liquids on construction sites of the Construction Regulations, 2014, and without limiting his obligations, cover at least the following matters in his Health and Safety Plan:

- How flammable liquids will be stored to minimize the risk of fire or explosions,
- How the contractor will identify a flammable store
- What safety precautions will be employed if ventilation of the flammable store is not possible,
- How access to flammable stores will be controlled,
- How empty vessels used for the storage of flammable liquids will be disposed of,
- What quantity of flammable liquids will be stored on the construction site,
- What systems are intended to ensure the safe storage of flammable liquids, and
- What retaining methods will be used to prevent the spreading of any spillage.

6.8.3 Gas Monitoring

The pipe lines that will be refurbished or replaced may harbor a considerable amount of various vapours and noxious gases. In most instances Methane will be present.
The Principal Contractor shall therefore implement work strategies to ensure that employees are not pre-disposed to the gases.
The Principal Contractor shall also prepare and submit a Confined Space Entry protocol for approval before working in the pipe lines.

During construction work, the Principal Contractor shall further conduct continuous gas monitoring by use of approved and calibrated gas monitors. These monitors must be equipped with alarms that must sound when a threshold values are reached; which shall be followed by appropriate evacua processes.

[redacted]

The Principal Contractor is further advised that before accessing pipelines, all manholes must be opened at least an hour prior to access. This shall allow release of accumulated gases to the atmosphere.

7. AUDITING

7.1 Internal Audits

The audits contemplated in regulation 5. (1)(d) of the Construction Regulations, 2014 will be carried out by the Employer or his appointed Safety Agent.

The intervals for the audits shall be agreed between the Contractor and the Employer or his Safety Agent during the preparation of the Contractor's Health and Safety Plan, but shall be carried out at least once every month or at such shorter interval that an inspector may require.
The findings of each audit will be made known to the Contractor and the Employer in a report prepared by the Employer or his Safety Agent and will be submitted to all parties within seven working days of the respective audit being completed. Any shortfalls identified will be documented in the audit report together with the Contractor's proposals to rectify the same. All audit reports will be filed in the Health and Safety File.
A date for a follow up audit will be negotiated with the Contractor to verify the implementation of all actions to rectify shortfalls as identified in the audit report.

The Contractor will ensure that the same arrangement detailed above be implemented with his Contractors to ensure his compliance with the Construction Regulations and contemplated in regulation 5. (3)(c).

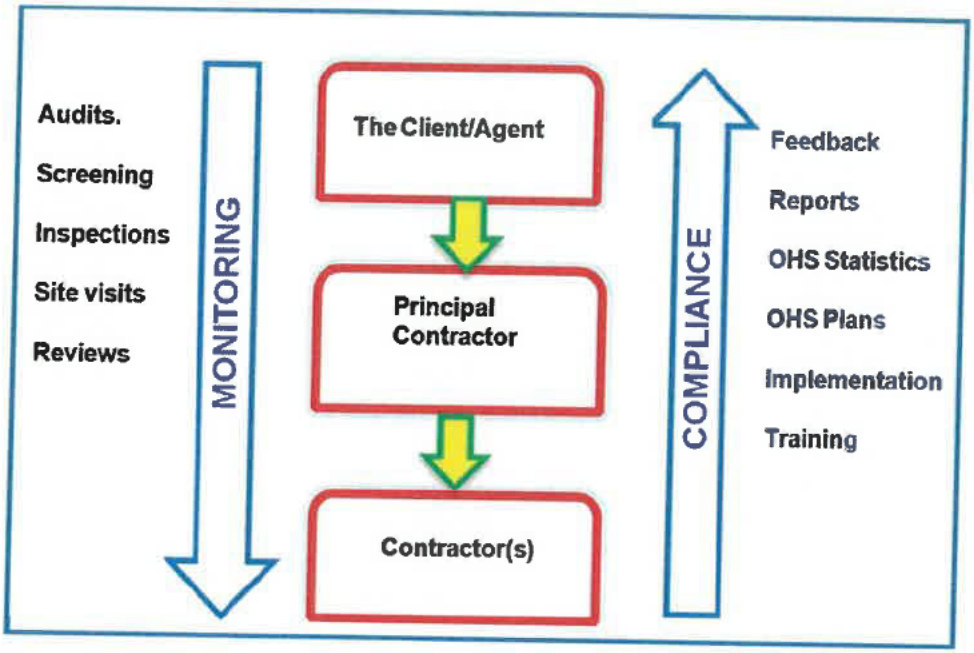
The audits described above only constitutes part compliance by the Employer or the Safety Agent with regulation 5. (1)(c) of the Construction Regulations, 2014.

7.2 Audits by Employer or Health and Safety Agent

The Employer or Safety Agent will be entitled to carry out additional audits or follow-up audits, as the case may be, at any time during the construction period provided that:

i) The audit or follow-up audit are carried out during ordinary working hours, and
ii) Principal Contractor is informed so as to take part in such audit

[redacted]


Audits.
Screening
Inspections
Site visits
Reviews
MONITORING
The Client/Agent
Principal Contractor
Contractor(s)
COMPLIANCE
Feedback
Reports
OHS Statistics
OHS Plans
Implementation
Training

[redacted]

HEALTH AND SAFETY SPECIFICATIONS (HSS)

PROJECT: City of Cape Town

Annexure A

The Principal Contractor must submit proof of compliance with Annexure A

HSS Item no.	REQUIREMENT	OHS ACT REQUIREMENT	SUBMISSION DATE
2.3.1	Assignment of Responsible Persons to supervise Construction work	OHS Act (section 16.2) & Construction Reg 6	Before commencement on site
2.3.2	Competence of Responsible Persons	OHS Act (section 16.2) & Construction Reg 6	Together with H & S plan
2.3.3	Compensation of Occupational Injuries and Diseases - Proof of Registration- FEM or CC	COIDA	Together with H & S plan
2.3.4	Occupational Health and Safety Policy	OHS Act	Together with H & S plan
2.3.5	Health and Safety Organogram	Client Requirement	Together with H & S plan
2.3.6	Initial Hazard Identification and Risk Assessment based on the Client/s assessment	Construction Regs.	Together with H & S plan
2.3.7	Health and Safety Representative	OHS Act	Submit as soon as there are more than 20 employees on site

[redacted]

HEALTH AND SAFETY SPECIFICATIONS (HSS)

CLIENT: City of Cape Town

Annexure B

The Principal Contractor shall make the following appointments according to the initial risk assessment: (further appointments could become necessary as the project progresses). Contractors shall make the relevant appointments as per their operations. The Client reserves the right to insist on any appointment as determined by its risk assessment of the Contractor concerned.

APPOINTMENT	OHS ACT REFERENCE	REQUIREMENT
CEO Assignee	Section 16(2)	A competent person to assume the overall H & S responsibility - Contractor's Responsible Person
Construction Work Supervisor	CR 8.1	A competent person to supervise and be responsible for Health and Safety related issues on site
Subordinate Construction Work Supervisors	CR 8.2	A competent person to assist with the daily supervision of construction / building work. The person(s) assist the Construction Work Supervisor
Health and Safety Representative(s)	Section 17	A competent person(s) to assist with identifying risks, attend H & S meetings, conduct inspections, assist with investigations, etc.
Incident Investigator	GAR 8	A competent person to investigate incidents / accidents on site and could be:* The 6.1 or 6.2 Person * H & S Representative * Member of the H & S Committee * H & S officer

Risk Assessment Co-coordinator	CR 9	A competent person to co-ordinate all assessments on behalf of the Contractor. The same applies to Contractors.
Fall protection plan co-coordinator	CR 10	A competent person to prepare and amend the fall protection plan

First Aiders	GSR 3	A qualified person to address all on site first aid cases
Lifting machine and equipment Inspector	DMR 18	A competent person to inspect lifting machines, equipment
Lifting tackle Inspector	DMR 18	A competent person to inspect lifting tackle
Scaffolding Inspector	SANS 10085-1:2004	A competent person to inspect scaffolding before use and every time after bad weather, etc.
Scaffolding Erector	SANS 10085-1:2004	A competent person to erect scaffolding
Scaffolding Supervisor	SANS 10085-1:2004	A competent person to supervise scaffolding
Stacking Supervisor	CR 28	A competent person to supervise all stacking and storage operations
	CR 21	

Explosive powered tools Inspector / Supervisor		A competent person to inspect and clean the tool daily and controlling all operations thereof
Temporary electrical installations Supervisor	CR 24	A competent person to control all temporary electrical installations
Fire-fighting equipment Inspector	CR 29	A competent person to inspect fire-fighting equipment

[redacted]

OTHER REQUIREMENTS

CLIENT: City of Cape Town

Annexure C

The Principal Contractor shall comply but not be limited to the following requirements: Report on these to the Client at progress meetings or at least monthly whichever is sooner. A report with supporting documents shall be tabled at the Contractor/s monthly Health and Safety meeting.

WHAT	WHEN	OUTPUT	ACCEPTED BY CLIENT WITH DATE
Construction-phase Health and Safety plan	Within one week of being awarded	Principal Contractor to report on status of Principal Contractors' Health and Safety plans	
Health and Safety file	Open file when construction begins and maintain throughout	Have file on hand at meetings	
Awareness Training (Tool Box Talks)	At least weekly	Attendance registers	
Health and Safety Reports	Monthly	Report covering: * Incidents/Accidents and Investigations * Non conformances by employees & contractor * Internal & External H & S audit reports	
Risk assessment	Updated and signed off at least monthly	Documented risk assessment	

Method statements (safe work procedures)	Drawn up before workers are exposed to new risks	Documented set of safe work procedures (method statements) updated and signed off	
General Inspections	Weekly and Daily	OHS Act compliance Registers: * Scaffolding * Excavations * Formwork & support work * Explosive tools * Temporary electrical Installations	
General Inspections	Monthly	* Fire-fighting equipment * Portable electrical equipment * Ladders	
General Inspections	3 - Monthly	* Lifting tackle * Oxy-acetylene cutting and welding sets * Fall prevention and arrest equipment	
General Inspections	6 - Monthly	* Lifting machines	
Workman's Compensation	Update Weekly	Table list of Principal Contractors' workman's compensation proof of good standing	
Construction site rules & Section 37.2 Mandatory Agreement	Update Weekly	Table a report of all signed up Mandatories	

[redacted]

Annexure D

PRO-FORMA AGREEMENT IN TERMS OF OCCUPATIONAL HEALTH AND SAFETY ACT 1993

OCCUPATIONAL HEALTH AND SAFETY ACT 1993 - SECTION 37 (2)

NEW CONSTRUCTION SAFETY REGULATIONS

The above-mentioned regulations were promulgated in the Govt. Gazette on Friday, 7 February 2014 under the Occupational Health & Safety Act (85 of 1993} and are now in force.

The Employer and the Contractor hereby agree, in terms of the provisions of Section 37(2) of the Occupational Health and Safety Act 1993 (Act 85 of 1993, hereinafter referred to as the Act), that the following arrangements and procedures shall apply between them to ensure compliance by the Contractor with the provisions of the Act, namely;

(a) The Contractor undertakes to acquaint the appropriate officials and employees of the Contractor with all the relevant provisions of the Act and the regulations promulgated in terms of the Act, and the Employer's Health and Safety Specifications included in the contract documents.

(b) The Contractor undertakes that all relevant duties, obligations and prohibitions imposed in terms of the Act and Regulations and the Employer's Health and Safety Specifications included in the contract documents will be complied with in all respects.

(c) In relation to any work or activity performed by the Contractor, his workmen or any other person for whose acts or omissions the Contractor is responsible in terms of the Contract, the Contractor hereby accepts sole liability for such due compliance with the relevant duties, obligations and prohibitions imposed by the Act and Regulations and expressly absolves the Employer from itself being obliged to comply with any of the aforesaid duties, obligations and prohibitions.

(d) The Contractor agrees that any duly authorized officials of the Employer shall be entitled, although not obliged, to take such steps as may be necessary to ensure that the Contractor has complied with his undertakings as set out more fully in paragraphs (a) and (b) above, which steps may include, but will not be limited to, the right to inspect any appropriate site or premises occupied by the Contractor, or to inspect any appropriate records held by the Contractor.

(e) The Contractor shall be obliged to report forthwith in writing to the Representative/Agent full details of any investigation, complaint or criminal charge which may arise as a consequence of the provisions of the Act and Regulations, pursuant to work performed in terms of this Contract.

(f) Forward "safety meeting" minutes to the representative/Agent.

For the Employer: _____ Date:_____

Witnesses: 1): _____ Witness: 2)_____

For the Contractor: _____ Date:_____

Witnesses:1):_____Witness: 2)_____

[redacted]

(Annexure E)

NOTIFICATION OF CONSTRUCTION WORK

To: The Provincial Director, Department of Labour.....

OCCUPATIONAL HEALTH AND SAFETY ACT, 1993

Regulation 4 of the Construction Regulations, 2014

NOTIFICATION OF CONSTRUCTION WORK

1. (a) Name and postal address of principal contractor:

.....

.....

(b) Name and telephone number of principal contractor's contact person:

.....

.....

2. Principal contractor's compensation registration number:

.....

.....

3. (a) Name and postal address of client:

.....

.....

(b) Name and telephone number of client's contact person or agent:

.....

.....

4. (a) Name and postal address of designer(s) for the project:

.....

.....

(b) Name and telephone number of designer's contact person:

.....

.....

[redacted]

5. Name and telephone number of principal contractor's construction supervisor on site appointed in terms of regulations 8(1):

.....

.....

6. Name/s of principal contractor's sub-ordinate supervisors on site appointed in terms of regulation 8(2):

.....

.....

7. Exact physical address of the construction site or site office:

.....

.....

8. Nature of the construction work:

.....

.....

9. Expected commencement date:

.....

10. Expected completion date:

.....

11. Estimated maximum number of persons on the construction site:

.....

12. Planned number of contractors on the construction site accountable to principal contractor:

.....

13. Name(s) of contractors already chosen:

.....

.....

.....

[redacted]

.....

....

Principal Contractor: ..... ***Date:*** .....

Client : ..... ***Date:*** .....

- THIS DOCUMENT IS TO BE FORWARDED TO THE OFFICE OF THE DEPARTMENT OF LABOUR **PRIOR TO COMMENCEMENT** OF WORK ON SITE.

- **ALL PRINCIPAL CONTRACTORS** THAT QUALIFY TO NOTIFY MUST DO SO EVEN IF ANOTHER PRINCIPAL CONTRACTOR ON THE SAME SITE HAD DONE SO PRIOR TO THE COMMENCEMENT OF WORK.

CLIENT: City of Cape Town

Annexure E

[redacted]

Acknowledgement of Receipt of the Health and Safety Specifications:

I,_____representing

_____ Contractor

Have satisfied myself with the content of the construction Health and Safety Specification and shall ensure that the Contractor and its personnel comply with all obligations / requirements in respect thereof.

Signature of CONTRACTOR	**DATE**
Signature of CLIENT / CLIENT'S AGENT	**DATE**

COMMENTS:

Annexure F:

IDENTIFIED HEALTH AND SAFETY HAZARDS

In terms of *Regulation 4(1)(b) of the Construction Regulations 2014* the following hazards anticipated with the scope of work have been identified.

[redacted]

NOTE: The list of potential hazards is by no means intended to be all inclusive and is not limited to this list, and it remains the responsibility of the Contractor to identify all possible hazards with regards to his scope of work and to put measures in place to mitigate, reduce or control these hazards.

Potential Hazards

1. Commissioning of new installations
2. Confined space entry
3. Noxious gases
4. Excavation shoring / brazing
5. Excavations been flooded during rainy season
6. Social/Public unrests
7. Hazardous material handling / storage / management
8. Heat stress
9. Loading and off-loading vehicles
10. Manual handling of materials
11. Plant and equipment integrity
12. Public and traffic safety
13. Requirements for plant isolations
14. Working in elevated positions
15. Safe usage and storage of oxygen, acetylene and LPG cylinders
16. Biological Agents
17. Stacking and storage of equipment / materials
18. Tie-ins into existing pipelines
19. Usage of compressed air and equipment
20. Work involving radio-active sources (soil moisture and density gauges, X-ray equipment, cell phones)
21. Working in operational areas
22. Working on live electrical installations / sub-stations / MCC rooms
23. Working on moving equipment.
24. Ergonomics
25. Refueling of plant and machinery
26. Fire on construction sites
27. Lifting machinery and equipment
28. Pipe jacking
29. Flora and fauna
30. Heat stress
31. Work in close Proximity to High Voltage Overheard lines

C3.6 Annexes

CONTENTS

Annex 1: Monthly Project Labour Report

Annex 2: B-BBEE Sub-Contract Expenditure Report

Annex 3: Joint Venture Expenditure Report

Annex 4: Targeted Labour Contract Participation Expenditure Report

Annex 5: Targeted Enterprises Contract Participation Expenditure Report

Annex 6: As-Built Protocol (Checklist)

[redacted]

ANNEX 1

CITY OF CAPE TOWN
MONTHLY PROJECT LABOUR REPORT

CITY OF CAPE TOWN
ISIXEKO SASEKAPA
STAD KAAPSTAD

Instructions for completing and submitting forms

General

1 The Monthly Project Labour Reports must be completed in full, using typed, proper case characters; alternatively, should a computer not be available, handwritten in black ink.
2 Incomplete / incorrect / illegible forms will not be accepted.
3 Any conditions relating to targeted labour stipulated in the Contract (in the case of contracted out services or works) shall apply to the completion and submission of these forms.
4 This document is available in Microsoft Excel format upon request from the City's EPWP office, tel 021 400 9406, email EPWPLR@capetown.gov.za.

Project Details

5 If a field is not applicable insert the letters: NA
6 Only the Project Number supplied by the Corporate EPWP Office must be inserted. The Project Number can be obtained from the Coordinator or Project Manager or from the e-mail address in point 4 above.
7 On completion of the contract or works project the anticipated end date must be updated to reflect the actual end date.

Beneficiary Details and Work Information

8 Care must be taken to ensure that beneficiary details correspond accurately with the beneficiary's ID document.
9 A new beneficiary is one in respect of which a new employment contract is signed in the current month. A certied ID copy must accompany this labour report on submission.
10 Was the beneficiary sourced from the City's job seeker database?
11 The contract end date as stated in the beneficiary's employment contract.
12 Where a beneficiary has not worked in a particular month, the beneficiary's name shall not be reflected on this form at all for the month in question.
13 Training will be recorded separately from normal working days and together shall not exceed the maximum of 23 days per month
14 Workers earning more than the maximum daily rate (currently R450 excluding any benefits) shall not be reflected on this form at all.

Submission of Forms

15 Signed hardcopy forms must be scanned and submitted to the City's project manager in electronic (.pdf) format, together with the completed form in Microsoft Excel format.
16 Scanned copies of all applicable supporting documentation must be submitted along with each monthly project labour report. Copies of employment contracts and ID documents are only required in respect of new beneficiaries.
17 If a computer is not available hardcopy forms and supporting documentation will be accepted.

PROJECT DETAILS

Numbers in cells below e.g (6) refer to the relevant instruction above for completing and submitting forms

CONTRACT OR WORKS PROJECT NAME: (6)		EPWP SUPPLIED PROJECT NUMBER: (6)	
DIRECTORATE:		DEPARTMENT:	
CONTRACTOR OR VENDOR NAME:		CONTRACTOR OR VENDOR E-MAIL ADDRESS:	
CONTRACTOR OR VENDOR CONTACT PERSON:		CONTRACTOR OR VENDOR TEL. NUMBER:	CELL WORK

PROJECT LABOUR REPORT CURRENT MONTH (mark with "X")

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR

ACTUAL START DATE (yyyy/mm/dd)	ANTICIPATED / ACTUAL END DATE (yyyy/mm/dd) (7)

TOTAL PROJECT EXPENDITURE / VALUE OF WORK DONE TO-DATE (INCLUDING ALL COSTS, BUT EXCLUDING VAT)

R

ANNEX 1 (continued)

MONTHLY PROJECT LABOUR REPORT

BENEFICIARY DETAILS AND WORK INFORMATION

CITY OF CAPE TOWN
ISIXEKO SASEKAPA
STAD KAAPSTAD

CONTRACT OR WORKS PROJECT NUMBER:	

Year	Month

Sheet		
1	of	

	(8)	(8)	(8)	(9)			(10)		(11)	(12)	(13)	(14)
No.	First name	Surname	ID number	New Beneficiary (Y/N)	Gender (M/F)	Disabled (Y/N)	Job seeker database (Y/N)	Contract start date (DDMMYY)	Contract end date (DDMMYY)	No. days worked this month (excl. training)	Training days	Rate of pay per day (R – c)
1												
2												
3												
4												
5												
6												
7												
8												
9												
10												
11												
12												
13												
14												
15												
16												
17												
18												
19												
20												
										0	0	R -

Declared by Contractor or Vendor to be true and correct:	Name		Signature	
	Date			

[redacted]ed by Employer's Agent / Representative:	Name		Signature	
	Date			

ANNEX 2

CITY OF CAPE TOWN

CONTRACT NO. AND NAME: .....

CONTRACTOR: .....

B-BBEE SUB-CONTRACT EXPENDITURE REPORT BASED ON PAYMENT CERTIFICATE NO. .....

Value of the contract (as defined in the **Preference Schedule**) (P*)	R	B-BBEE Status Level of Prime Contractor	

Name of Sub-contractor (list all)	**B-BBEE Status Level of Sub-contractor[1]**	**Total value of Sub-contract (excl. VAT)[1]**	**Value of Sub-contract work to date (excl. VAT)[1]**	**Value of Sub-contract work to Sub-contractors with a lower B-BBEE Status Level than Prime Contractor**
Sub-contractor A		R	R	R
Sub-contractor B		R	R	R
Sub-contractor C		R	R	R
			Total:	R
			Expressed as a percentage of P*	%

[1]Documentary evidence to be provided

Signatures

Declared by Contractor to be true and correct: _____ **Date:** _____

Verified by Employer's Agent / Representative:

[redacted] 3 _____ **Date:** _____

CITY OF CAPE TOWN

CONTRACT NO. AND NAME: .....

CONTRACTOR: .....

JOINT VENTURE EXPENDITURE REPORT BASED ON PAYMENT CERTIFICATE NO. .....

Value of the contract (as defined in the **Preference Schedule**) (P*)	R	B-BBEE Status Level of Joint Venture	

Name of Joint Venture partner (list all)	B-BBEE Status Level of each JV partner as at contract award	Percentage contribution of JV partner per JV Agreement[1] A	Total value of JV partner's contribution (excl. VAT)[1] B = A% x P*	Value of JV partner's contribution to date (excl. VAT)[1] C	Value of JV partner's contribution as a percentage of the work executed to date D = C/P*x100
JV Partner A		%	R	R	%
JV Partner B		%	R	R	%
JV Partner C		%	R	R	%

[1]Documentary evidence to be provided

Signatures

Declared by Contractor to be true and correct: _____ **Date:** .....

Verified by Employer's Agent / Representative ..... **Date:** _____

ANNEX 4

CITY OF CAPE TOWN

CONTRACT NO. AND NAME: .....

CONTRACTOR: .....

TARGETED LABOUR CONTRACT PARTICIPATION EXPENDITURE REPORT BASED ON CERTIFICATE NO. .....

Value of the contract (as defined in the **Preference Schedule**) (P*)	R

Specified Targeted Labour Contract Participation Goal	%

Name of Contractor/Sub-contractor (list all)	Total previous expenditure on wages in respect of targeted labour	Net Amount for this month[1]	Total expenditure on wages in respect of targeted labour
Contractor	R	R	R
Sub-contractor A	R	R	R
Sub-contractor B	R	R	R

[1]Documentary evidence to be provided

Total:	R
Expressed as a percentage of **P***	%

Signatures

Declared by Contractor to be true and correct: _____ **Date** _____

Verified by Employer's Agent / Representative

_____ **Date** _____

[redacted]

ANNEX 5

CITY OF CAPE TOWN

CONTRACT NO. AND NAME: .....

CONTRACTOR: .....

TARGETED ENTERPRISES CONTRACT PARTICIPATION EXPENDITURE REPORT BASED ON CERTIFICATE NO. .....

Value of the contract (as defined in the **Preference Schedule**) (P*)	R	Specified Targeted Enterprises Contract Participation Goal	%

Name of targeted enterprise (list all)	**Total previous expenditure (excl. VAT) to targeted enterprises**	**Net Amount for this month[1]**	**Total expenditure (excl. VAT) to targeted enterprises**
Targeted Enterprise A	R	R	R
Targeted Enterprise B	R	R	R
Targeted Enterprise C	R	R	R
		Total:	R
		Expressed as a percentage of **P***	%

[1]Documentary evidence to be provided

Signatures

Declared by Contractor to be true and correct: _____ **Date** _____

Verified by Employer's Agent/ Employer's Agent's Representative: _____ **Date** .....

[redacted]

ANNEX 6

AS-BUILT PROTOCOL (CHECKLIST)

The following protocols regarding civil "as built" plans and GIS data are implemented by the City of Cape Town

WS_RET_REG_017	29/07/2019	WATER AND SANITATION DEPARTMENT	Version: 01	
COMPILED: BII: SPO		INFORMAL SETTLEMENTS BASIC SERVICES	APPROVED: MANAGER	
ALL CONTROLLED documents are located in the SAP DM System				Printed 2019/07/29
Printed documents are NOT CONTROLLED except if signed and dated				Page 1 of 1

	As-built data should be supplied to the CITY OF CAPE TOWN in GIS and CAD and Hardcopy formats, and comply with prescribed survey standards. **1) AS BUILT PLANS** **2) GIS DATA FORMAT / STANDARDS** **3) CAD** **4) SURVEY**
	1) AS-BUILT PLANS
☐	1.1 Two (2) sets of "as built" services layout plans (Scale 1 : 500), including longitudinal sections if applicable, be provided and loosely rolled up. (to be printed on Hydromat Film OR Coated Paper)
☐	1.2 The hard copies should be on standard sheet sizes. Hard copies should not be larger than A0. **A1 paper size is preferred.**
☐	1.3 No Telkom or electrical data should appear on the civil "as built" plans or digital data, unless requested by the City of Cape Town.
☐	1.4 **As-Built drawings:** *Services should be separated on the drawings as follows:* - Water Layout (excluding contours) - Sewer Layout (excluding contours) - Roads and Storm water Layout (including contours) - Roads and Traffic Signage Layout - Combined Services (water, sewer and storm water) (excluding contours) - Electrical and Telkom (on request)
☐	1.5 **The following information needs to be clearly indicated on all drawings:** All appropriate Map Layout features o Title Block o Clear Legends indicating all services o North sign o Scale
☐	1.6 Date – of all revisions should be indicated and final "as builts" date.
☐	1.7 The Name of Development / Suburb.
☐	1.8 Where there are various phases, it should be shown clearly on a Locality insert map
☐	1.9 Street names (if available).
☐	1.10 The correct erf numbers on the erven if available from the Surveyor General
☐	1.11 Servitudes and their widths.
☐	1.12 Revision number (A-Z) With "as builts" as revision ZZ . Final plan clearly indicated as "As-built" and marked as revision ZZ.
☐	1.13 The name in full and signature of the responsible project manager, contact details, as well as the names of the clients, consultants, contractor and Project number should be on the "as builts".
☐	1.14 The ownership, regarding "Municipal or Private" services should be clearly indicated.
☐	1.15 That all features and attribute data, i.e. pipes/leadings/valves/fittings and diameter/class, materials, slopes, lengths, cover and invert levels be clearly indicated on the drawings, positioned at the entity.
☐	1.16 The type of valves and hydrants indicated on the plan
☐	1.17 Accurate dimensions for all services
☐	1.18 Co-ordinate lists (ASCII /Excel file) of the valves, fire hydrants, manholes, meter positions, leading end cap, etc. should appear on the plan and to be digitally handed over to the Council.
☐	1.19 A table, indicating the total length of New Pipes/Relays for the different pipe diameters, class and types.

[redacted]

☐	1.20 Bulk Water Meter details (Location XY, size)
☐	1.21 The new "as-built" data should not be indicated as "proposed".
	Disclaimer: *It is the responsibility of the contractor to verify the locations of the Water and Sanitation infrastructure in the field, as supplied to them by the CCT, before the start of construction and to immediately brought any discrepancies/ anomalies to the attention of the Water and Sanitation department.*
	2) GIS **GIS DATA FORMAT / STANDARDS**
☐	2.1 **The GIS data must be produced and provided in the following projection:** Map Projection: Gauss Conformal (Transverse Mercator) Datum: Hartebeeshoek 94 Spheroid: WGS 84 Scale Factor: 1 Central Meridian: 19 Units: International Meter
☐	2.2 **Spatial data should be supplied to the CITY OF CAPE TOWN in the following formats:** ***When NO Geodatabase has been provided by the Municipality:*** o Data to be submitted in ESRI GIS formats: ArcGIS File Geodatabase or Personal Geodatabase or Shape files (*.shp); with attributes containing pipe diameters /class, length, capacity, material, CL/IL (**height values must be referenced to Mean Sea Level**), consultant etc. o All field names must be understandable and, if provided as a Shapefile, the field names must be shorter than eight characters. o If the field name is more that one word, underscores must be used e.g. Facility_Name o Metadata explaining the field names and field parameters must be provided ***When an empty Geodatabase was provided by Water & Sanitation GIS*** o Capture all data and relevant fields as specified in the tender specifications o If any other spatial data (Except for the feature classes provided) is included in the final deliverable this data should be in a feature dataset o Data must be captured with the cadastral file used as background reference o All raster data and symbolize layers must be excluded from the geodatabase and provided in a separate folder
☐	2.3 **Topology:** *All data supplied to the CITY OF CAPE TOWN should have spatial topology.* o The capturing direction of line features (pipes) must reflect the gravity (flow) direction of the sewer pipe. (Capture in the Flow Direction of the Pipes.) o Connectivity must be complete; stipulating that all connected features snaps accurately to one another with no under- or over shoots, point-to-line and line-to-line. o The drawing must be "topologically clean" with no duplication of features.
	3) CAD
☐	3.1 Cross Sections, Longitudinal Sections and Detail Drawings are required in CAD format.
☐	3.2 "As built" drawings in electronic AutoCad.dxf format is preferred, or alternatively
☐	AutoCad.dwg (version 2000 or older). At least two drawing formats must be provided e.g. Dxf and AllyCad.drg or Dxf and AutoCad.dwg – AND in Pdf format.
☐	3.3 The CAD drawings should be drawn BY LAYER and not BY COLOR and the layer names must be descriptive and just and containing not more than 8 digits. (Each theme type must be drawn on a different layer.)
☐	3.4 No "YELLOW" colour of layers will be accepted.
	4) SURVEY
☐	4.1 It is the responsibility of the contractor to verify the locations of the Water and Sanitation infrastructure in the field, as supplied to them by the CCT, before the start of construction and to immediately bring any discrepancies/ anomalies to the attention of the Water and Sanitation department.
☐	4.2 Post construction survey of the centre points of all surface features (valves, fire hydrants, manholes, meter positions etc), including pipe bends, endcaps, tee's and crosses as part of "as built" information.

☐	4.3 Reference points such as "Town Survey Marks" and "Working Stations" used during As-Built survey to be listed on the plan in the following format: Name, Y coord, X coord, Z value, Description
☐	4.4 Height values must be referenced to Mean Sea Level (MSL) if MSL controll points are available.
☐	4.5 Surveyor signature to be present on all As Built plans
☐	**4.6 "As Built" to be completed and handed over on final inspection to the person representing the City of Cape Town. As Built completion and acceptance by the CCT is a requisite before the release of the final contract payment.**
☐	**The complete electronic data set must be provided in CD/DVD/USB Media with the name of the development, the mother erf number and the consultants company name and contact details clearly indicated on both the cover and the CD disk.**

CHANGE LIST

Page	Reason for change	Version	Reviewer	Release Date
All	Original Development	0	Alwyn Smit & Tiaan van Lill	2018-08-17

[redacted]

Part C4: Site information

		Pages
C4	Site information	228 - 229

[redacted]

CITY OF CAPE TOWN

WATER AND SANITATION: DISTRIBUTION SERVICES

CONTRACT NO. 83Q/2023/24

TERM TENDER FOR LAYING OF NEW SEWER MAINS

C4 Site Information

CONTENTS

1. GENERAL

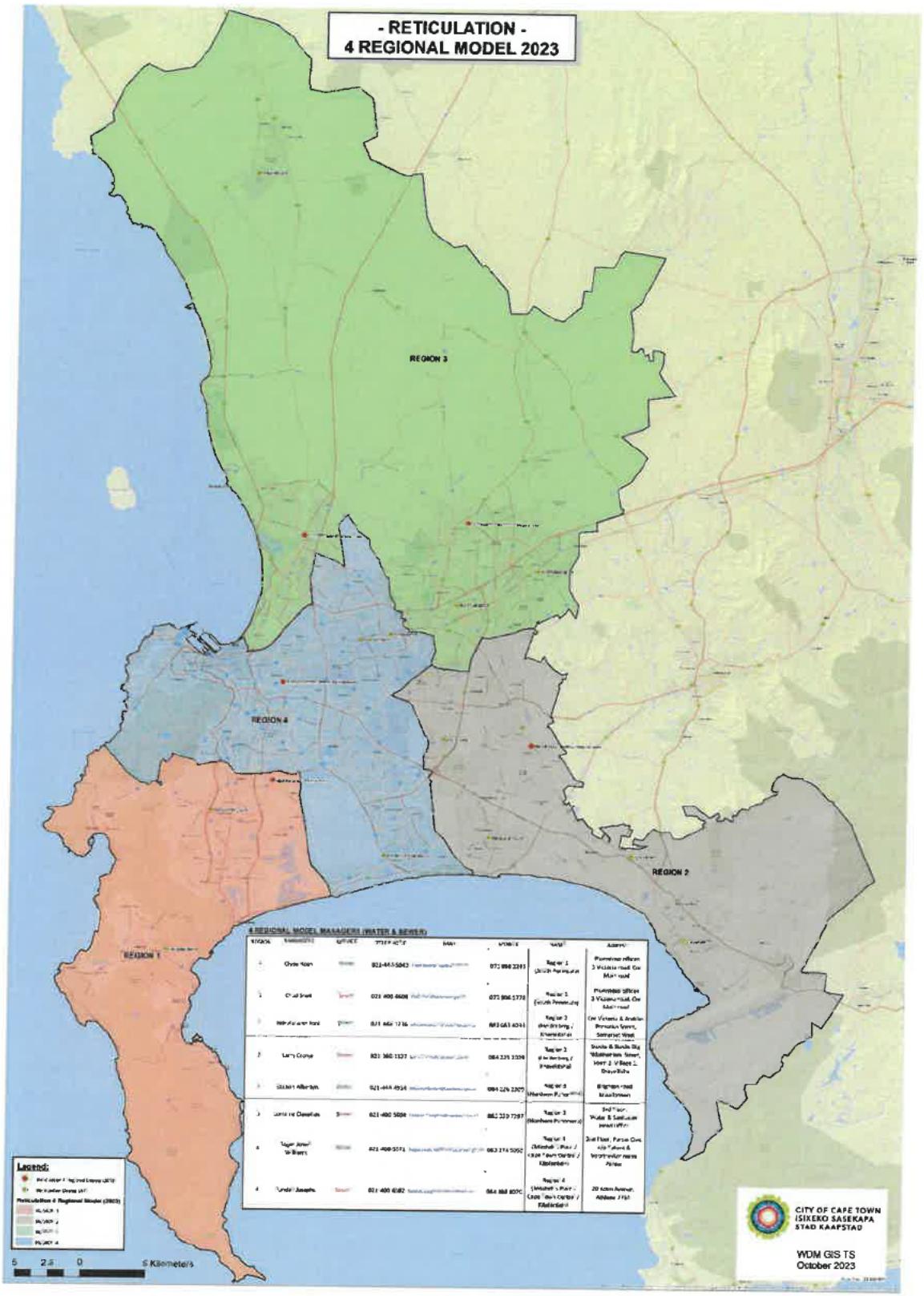
2. WORKS PROJECTS

1. GENERAL

The sites for the Works are those areas which may be identified within the City of Cape Town municipal area in which Works Projects are to be executed. See the Reticulation 4 Regional Model map on the next page.

2. WORKS PROJECTS

Site specific information will be specified, as required, in the Works Project contract document for a particular Works Project.


- RETICULATION -
4 REGIONAL MODEL 2023
REGION 3
REGION 4
REGION 2
REGION 1
4 REGIONAL MODEL MANAGERS (WATER & SEWER)
Legend:
5 2.5 0 5 Kilometers
CITY OF CAPE TOWN
ISIXEKO SASEKAPA
STAD KAAPSTAD
WDM GIS TS
October 2023

[redacted]

Part C5: Drawings

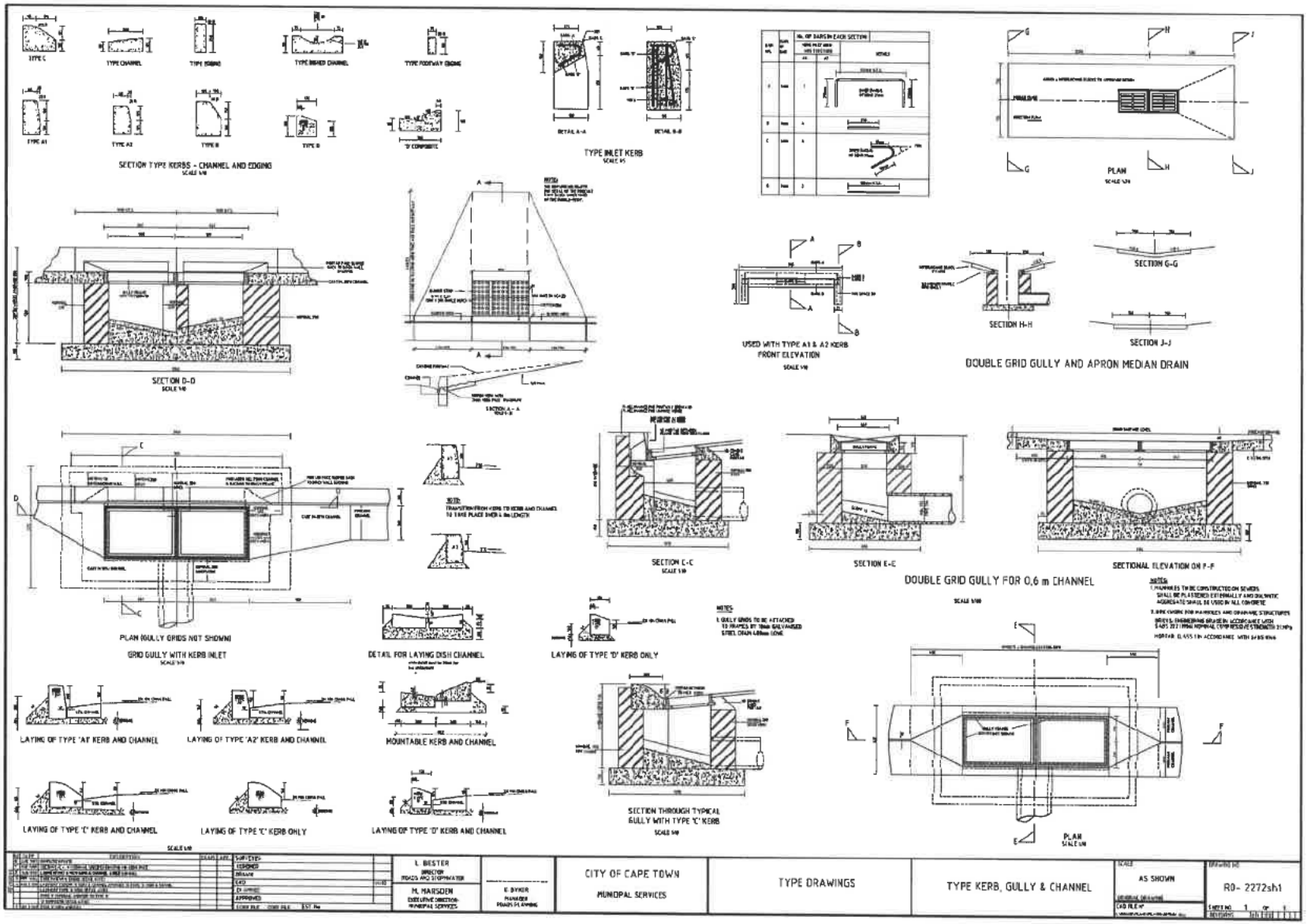
		Pages
C5	Drawings	231 - 239

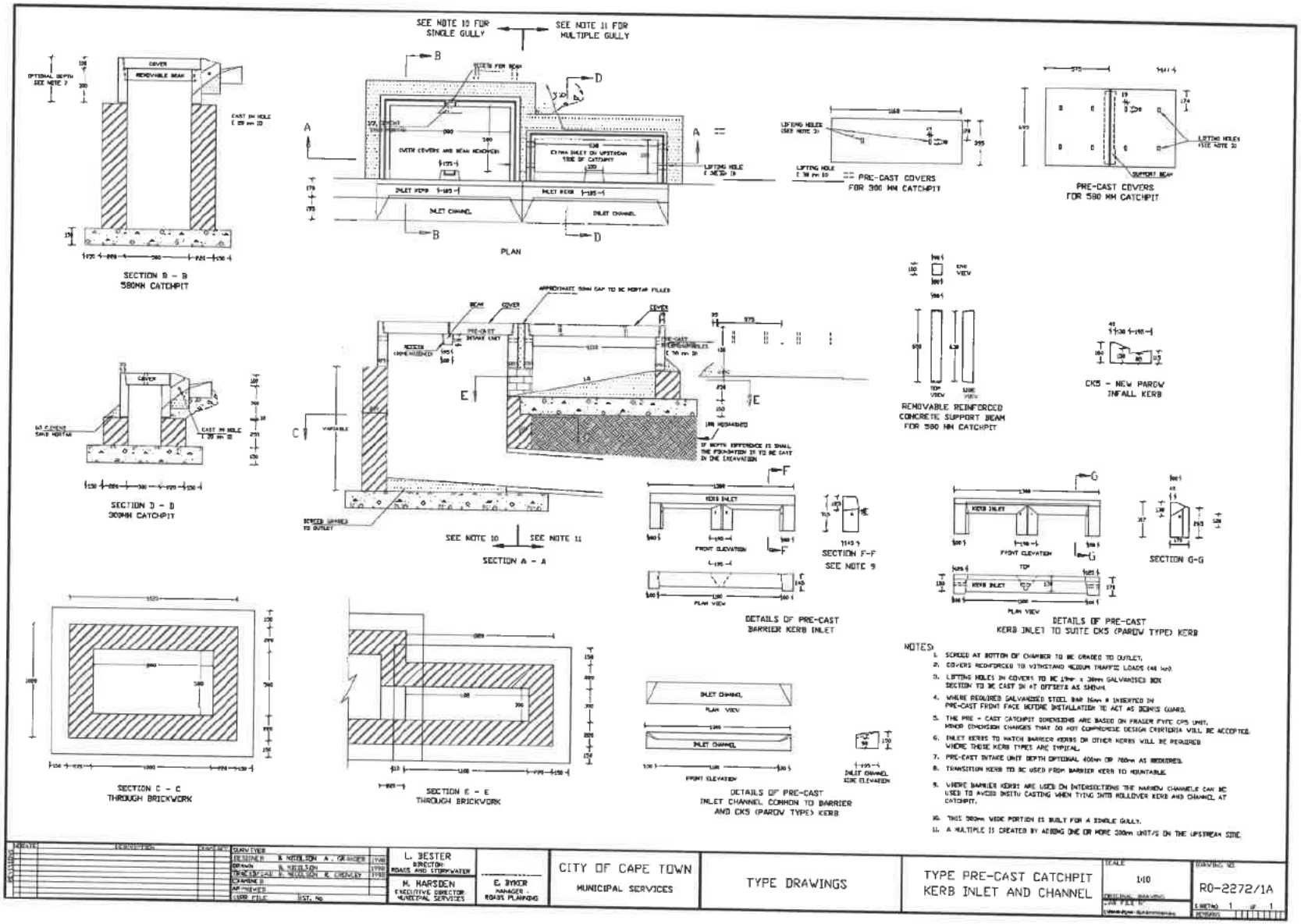
C5 Drawings

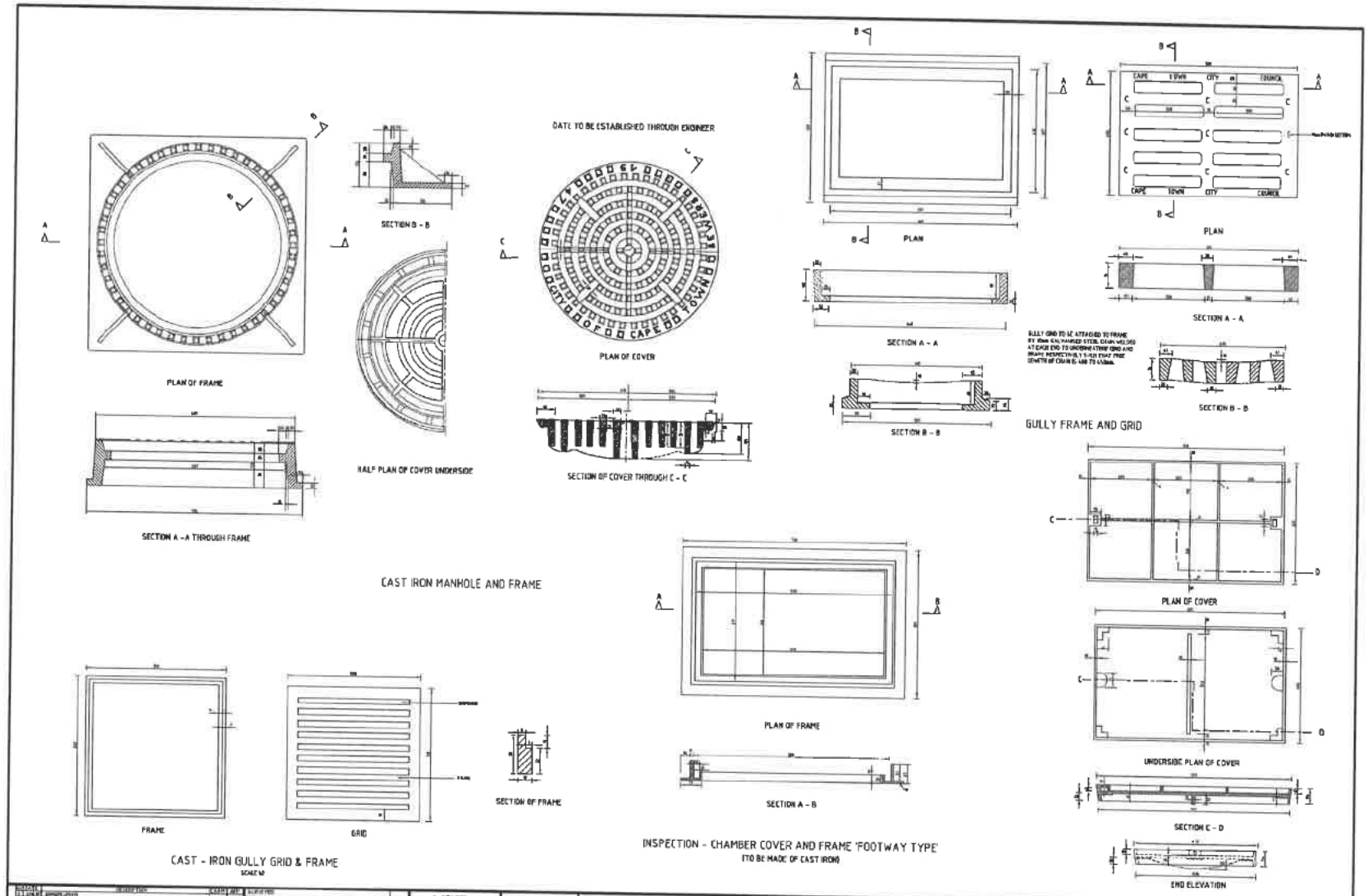
The Works shall be carried out in accordance with the following drawings which are included at the back of this document and form part of the contract documents:

DRAWING NUMBERS	DRAWING DESCRIPTION
R0-2272sh1	Type Kerb, Gully & Channel
R0-2272/1A	Type Pre-Cast Catchpit Kerb Inlet and Channel
R0-2272/3	Inspection Chamber Cover, Gully Frame and Grid, Cast Iron Stormwater Covers
R0-2272/8	Precast Concrete Manhole Types of Trench Bedding
S1	Sewer Manhole
SEW01	Sandtrap Design
RD16.1	Reinstatement of Shallow Trenches in Road Reserves: Trenches in Roadways
RD16.2	Reinstatement of Shallow Trenches in Road Reserves: Trenches in Pedestrian Footways and Verges

[redacted]

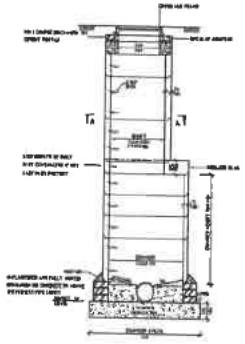

TYPE C
TYPE CHANNEL
TYPE SQUARE
TYPE RAISED CHANNEL
TYPE FOOTWAY EDGING
TYPE A1
TYPE A2
TYPE B
TYPE D
'D' COMPOSITE
SECTION TYPE KERBS - CHANNEL AND EDGING
SCALE 1/5
RETAIL A-A
RETAIL B-B
TYPE INLET KERB
SCALE 1/5
No. OF BARS IN EACH SECTION
MARKS
PLAN
SCALE 1/5
SECTION G-G
SECTION H-H
SECTION J-J
USED WITH TYPE A1 & A2 KERB
FRONT ELEVATION
SCALE 1/10
DOUBLE GRID GULLY AND APRON MEDIAN DRAIN
SECTION D-D
SCALE 1/10
SECTION C-C
SCALE 1/10
SECTION E-E
SECTIONAL ELEVATION ON F-F
DOUBLE GRID GULLY FOR 0,6 m CHANNEL
SCALE 1/10
PLAN (GULLY GRIDS NOT SHOWN)
GRID GULLY WITH KERB INLET
SCALE 1/10
DETAIL FOR LAYING DISH CHANNEL
LAYING OF TYPE 'D' KERB ONLY
LAYING OF TYPE 'A1' KERB AND CHANNEL
LAYING OF TYPE 'A2' KERB AND CHANNEL
MOUNTABLE KERB AND CHANNEL
LAYING OF TYPE 'C' KERB AND CHANNEL
LAYING OF TYPE 'C' KERB ONLY
LAYING OF TYPE 'D' KERB AND CHANNEL
SECTION THROUGH TYPICAL GULLY WITH TYPE 'C' KERB
SCALE 1/10
PLAN
SCALE 1/10
SCALE 1/10
L. BIESTER
DIRECTOR
ROADS AND STORMWATER
M. MARSDEN
EXECUTIVE DIRECTOR
MUNICIPAL SERVICES
E. BYKER
MANAGER
ROADS PLANNING
CITY OF CAPE TOWN
MUNICIPAL SERVICES
TYPE DRAWINGS
TYPE KERB, GULLY & CHANNEL
SCALE
AS SHOWN
CAD FILE No.
DRAWING No.
RD- 2272sh1
SHEET No. 1 OF 1


SEE NOTE 10 FOR SINGLE GULLY
SEE NOTE 11 FOR MULTIPLE GULLY
SECTION B - B
580MM CATCHPIT
PLAN
PRE-CAST COVERS
FOR 300 MM CATCHPIT
PRE-CAST COVERS
FOR 580 MM CATCHPIT
SECTION D - D
300MM CATCHPIT
SEE NOTE 10
SEE NOTE 11
SECTION A - A
REMOVABLE REINFORCED
CONCRETE SUPPORT BEAM
FOR 580 MM CATCHPIT
CK5 - NEW PAROV
INFALL KERB
SECTION F-F
SEE NOTE 9
DETAILS OF PRE-CAST
BARRIER KERB INLET
SECTION G-G
DETAILS OF PRE-CAST
KERB INLET TO SUITE CK5 (PAROV TYPE) KERB
SECTION C - C
THROUGH BRICKWORK
SECTION E - E
THROUGH BRICKWORK
DETAILS OF PRE-CAST
INLET CHANNEL COMMON TO BARRIER
AND CK5 (PAROV TYPE) KERB
NOTES:
1. SCREED AT BOTTOM OF CHAMBER TO BE GRADED TO OUTLET.
2. COVERS REINFORCED TO WITHSTAND MEDIUM TRAFFIC LOADS (40 kn)
3. LIFTING HOLES IN COVERS TO BE 19mm x 38mm GALVANISED BOX SECTION TO BE CAST IN AT OFFSETS AS SHOWN.
4. WHERE REQUIRED GALVANIZED STEEL BAR 16mm ø INSERTED IN PRE-CAST FRONT FACE BEFORE INSTALLATION TO ACT AS DEBRIS GUARD.
5. THE PRE - CAST CATCHPIT DIMENSIONS ARE BASED ON FRASER FYFE CPS UNIT. MINOR DIMENSION CHANGES THAT DO NOT COMPROMISE DESIGN CRITERIA WILL BE ACCEPTED.
6. INLET KERBS TO MATCH BARRIER KERBS OR OTHER KERBS WILL BE REQUIRED WHERE THOSE KERB TYPES ARE TYPICAL.
7. PRE-CAST INTAKE UNIT DEPTH OPTIONAL 406mm OR 760mm AS REQUIRED.
8. TRANSITION KERB TO BE USED FROM BARRIER KERB TO MOUNTABLE.
9. WHERE BARRIER KERBS ARE USED ON INTERSECTIONS THE NARROW CHANNELS CAN BE USED TO AVOID INSITU CASTING WHEN TYING INTO ROLLOVER KERB AND CHANNEL AT CATCHPIT.
10. THIS 580mm WIDE PORTION IS BUILT FOR A SINGLE GULLY.
11. A MULTIPLE IS CREATED BY ADDING ONE OR MORE 300mm UNITS ON THE UPSTREAM SIDE.
L. BESTER
DIRECTOR:
ROADS AND STORMWATER
M. HARSDEN
EXECUTIVE DIRECTOR:
MUNICIPAL SERVICES
E. BYKER
MANAGER:
ROADS PLANNING
CITY OF CAPE TOWN
MUNICIPAL SERVICES
TYPE DRAWINGS
TYPE PRE-CAST CATCHPIT
KERB INLET AND CHANNEL
SCALE
1:10
DRAWING NO.
RD-2272/1A
SHEET(S) 1 OF 1

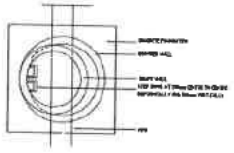

DATE TO BE ESTABLISHED THROUGH ENGINEER
PLAN OF FRAME
SECTION B - B
HALF PLAN OF COVER UNDERSIDE
PLAN OF COVER
SECTION OF COVER THROUGH C - C
SECTION A - A THROUGH FRAME
CAST IRON MANHOLE AND FRAME
PLAN
SECTION A - A
SECTION B - B
GULLY FRAME AND GRID
PLAN OF COVER
UNDERSIDE PLAN OF COVER
SECTION C - D
END ELEVATION
FRAME
GRID
SECTION OF FRAME
CAST - IRON GULLY GRID & FRAME
PLAN OF FRAME
SECTION A - B
INSPECTION - CHAMBER COVER AND FRAME 'FOOTWAY TYPE'
(TO BE MADE OF CAST IRON)
L. BESTER
DIRECTOR
ROADS AND STORMWATER
M. MARSDEN
EXECUTIVE DIRECTOR
MUNICIPAL SERVICES
E. BYKER
MANAGER
ROADS PLANNING
CITY OF CAPE TOWN
MUNICIPAL SERVICES
TYPE DRAWINGS
INSPECTION CHAMBER COVER
GULLY FRAME AND GRID
CAST IRON STORMWATER COVERS
ORIGINAL DRAWING
R0- 2272/3

NOTES:

1. USE THE CITY OF CAPE TOWN CAST IRON MANHOLE COVERS AND FRAMES AS DETAILED ON PLAN R0-2272/5 OR R0-2272/6 OR R0-2272/7 TO BE OF SOLID TYPE EXCEPT FOR STORM WATER MANHOLES LOCATED IN SLACKS OR DEPRESSIONS.
2. FOR SEWER MANHOLES USE DOLOMITE AGGREGATE. ALL DOLOMITE COMPONENTS TO BE CLEARLY MARKED AS SPECIFIED ON DRAWING.
3. STEP IRONS SHALL BE OF CAST IRON IN ACCORDANCE WITH SABS 1083-1975 FOR GRADE 250 GREY IRON CASTINGS OR APPROVED ALTERNATIVE AND SHALL BE BUILT AT 240mm CENTRES VERTICALLY WITH ALTERNATE STEP IRONS SPACED HORIZONTALLY AT 200mm CENTRE TO CENTRE.
4. THE TOP STEP IRON SHALL NOT BE CLOSER THAN 500mm TO OR FURTHER THAN 750mm FROM TOP OF MANHOLE COVER.
5. A STEP IRON MUST BE CAST IN TO THE BENCHED SLAB IN THE FACTORY OR ATTEMPTS TO BUILT IN BY THE CONTRACTOR AND OUTGOING PIPELINES.
6. MANHOLE SHAFTS MUST BE LOCATED AS CLOSELY AS POSSIBLE TO THE CENTRE OF THE MAIN INCOMING AND OUTGOING PIPELINES.
7. THE SHAFT SHALL BE SUPPORTED ON REINFORCED SLAB OF MIN THICKNESS 175mm WITH CIRCULAR APERTURE OF SAME DIAMETER AS THE INSIDE DIAMETER OF THE SHAFT AND OF SUITABLE CONSTRUCTION TO ENSURE THAT THE SHAFT WALL NOT BE DISPLACED.
8. DEPTHS OF RING SECTIONS TO BE IN MULTIPLES OF 250mm.
9. MIN WALL THICKNESS OF BOTH SHAFT AND CHAMBER TO BE 75mm.
10. MIN WIDTH OF BENCHING AT WIDEST PART OF MANHOLE TO BE 240mm.
11. ALL JOINTS TO BE SEALED WITH AN APPROVED JOINT SEALANT.
12. IN ALL RESPECTS OTHER THAN THOSE DETAILED ON THIS DRAWING MANHOLES TO CONFORM WITH SABS 1294 LATEST EDITION 1.
13. REFER TO DRAWING R0-2264.
14. ERF MANHOLES WITH A DEPTH LESS THAN 0.8 TO TOP OF FRAME, BRICKWORK AND CIRCULAR ADAPTOR ARE TO BE PLACED DIRECTLY ONTO THE REDUCER SLAB TO ACHIEVE MAXIMUM CLEARING HEIGHT.

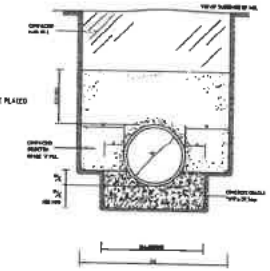


SECTIONAL ELEVATION
SCALE N/S

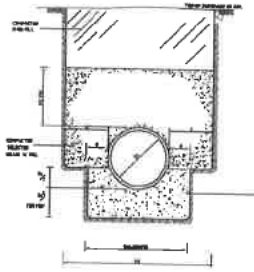


SECTION A – A
SCALE N/S

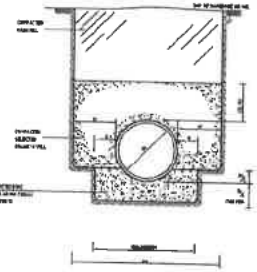
TYPE DRAWING OF PRECAST CONCRETE MANHOLE FOR PIPE SIZES NOT EXCEEDING 525mm



CLASS 'A' BEDDING
N/S



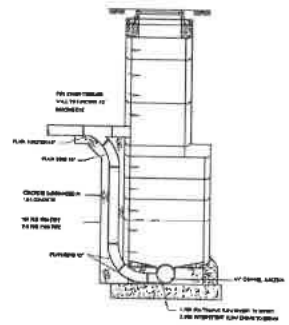
CLASS 'B' BEDDING
N/S



CLASS 'C' BEDDING
N/S

NOTES:
1. DIMENSION 'B' = NOMINAL PIPE DIAMETER
2. 375 = N/S
3. A-SB
4. CONCRETE PIPES USED FOR SEWER TO COMPRISE LINE STONE AGGREGATE ONLY.
5. GRADING OF BEDDING MATERIALS ACCORDING TO SABS 1200 LD, 1200 MINE LD.A

TYPES OF TRENCH BEDDING FOR CONCRETE PIPES

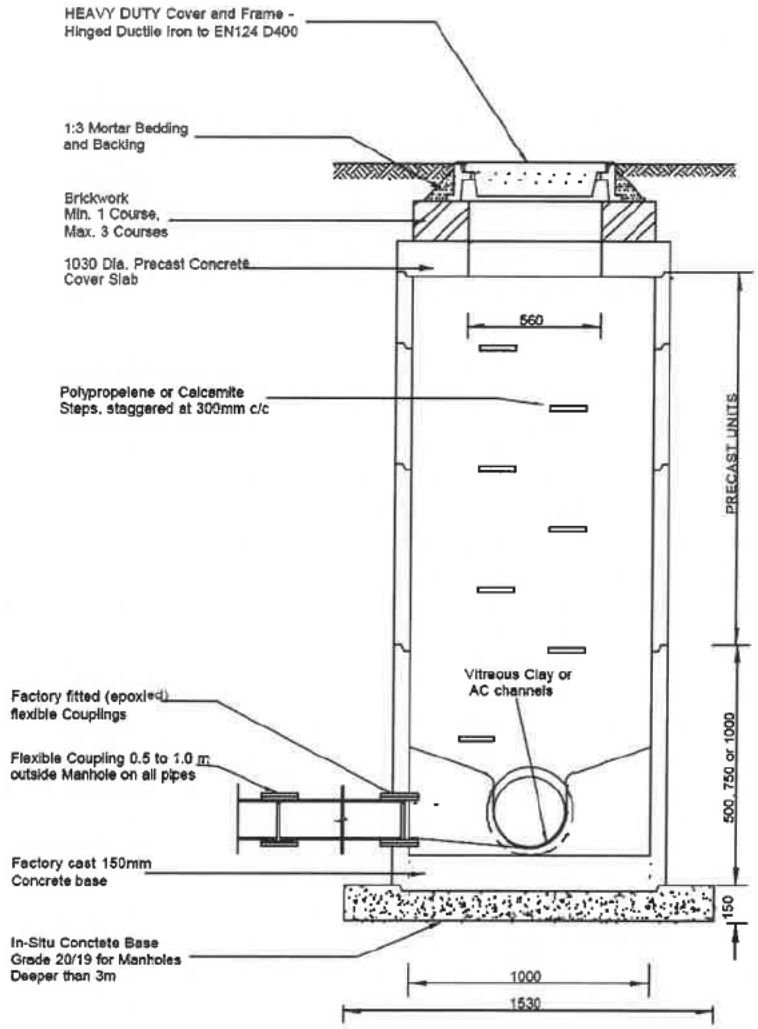


SECTIONAL ELEVATION
SCALE N/S

TYPE DRAWING FOR PRECAST CONCRETE MANHOLE SHOWING BACKDROP FOR SEWERS ONLY

L. BESTER DIRECTOR ROADS AND STORMWATER H. MARSDEN EXECUTIVE DIRECTOR MUNICIPAL SERVICES	E. BYKER MANAGER ROADS PLANNING	CITY OF CAPE TOWN MUNICIPAL SERVICES	TYPE DRAWINGS	PRECAST CONCRETE MANHOLE TYPES OF TRENCH BEDDING	AS SHOWN	R0- 2272/8

[redacted]



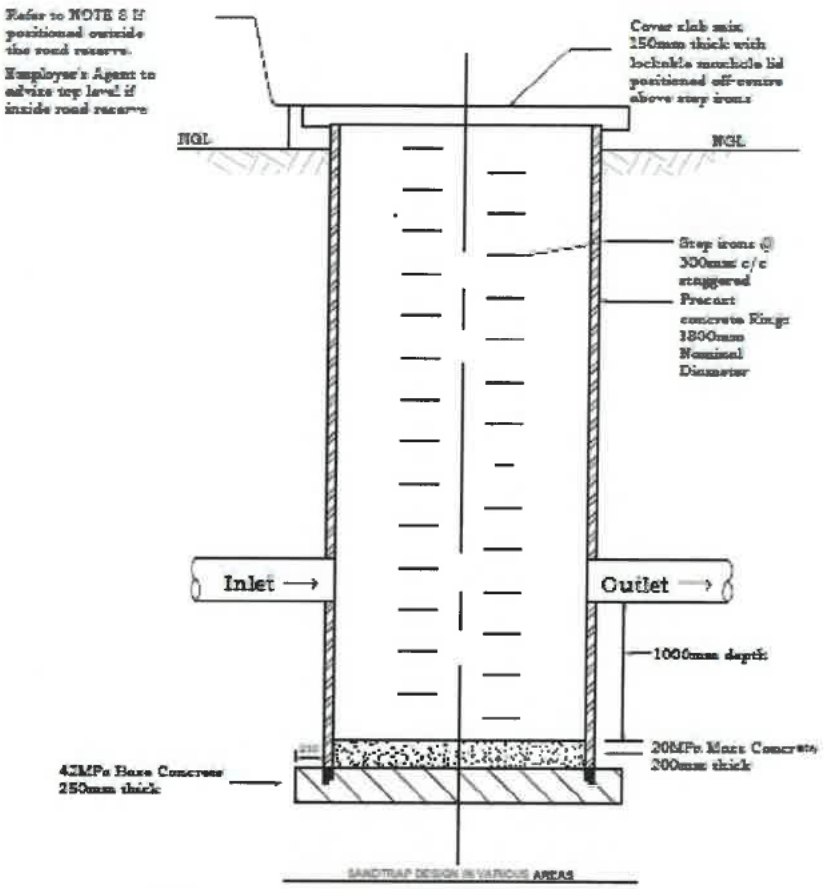
Note:

1) Refer to SABS 1200 LD for Specifications and Items not indicated

2) For sealing specifications refer to the text portion of the City's Standard Specifications

TITLE	SCALE	DATE
SEWER MANHOLE (Precast Concrete Ring Type)	1:25	February 2007
	CITY OF CAPE TOWN STANDARD DETAILS	
	DRAWING No:	S1

[redacted]



NOTES

1. Base and section design minimum concrete strength of 42MPa.
2. Mass concrete strength 20MPa.
3. Base and section to be manufactured using dolomitic aggregate.
4. Step irons to be installed at vertical spacing of 250mm and staggered alternately left and right at 300mm centres.
5. Step irons to be co-polymer polypropylene with a 16mm diameter high tensile steel reinforcement core.
6. All manhole joints to be sealed with a sealer and application to be done strictly in accordance to the manufacturers specification.
7. Opening for pipe to suit the existing pipe diameter and must be water tight.
8. Top of cover slab to be positioned a minimum of 300mm above normal ground level. Cover slab to be provided with lockable manhole lid. Manhole lid to be positioned off centre above step irons.

CITY OF CAPE TOWN
ISIXEKO SASEKAPA
STAD KAAPSTAD

Making progress possible. Together.

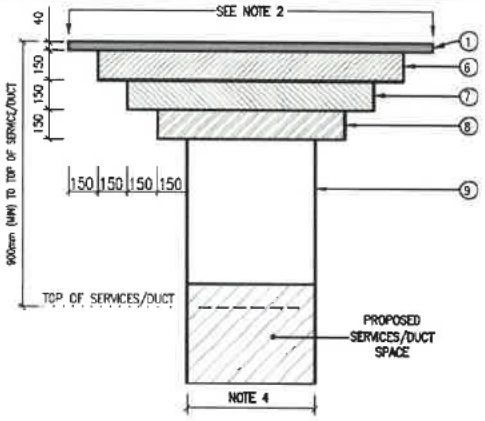
SANDTRAP DESIGN

DWG NO: SEW01

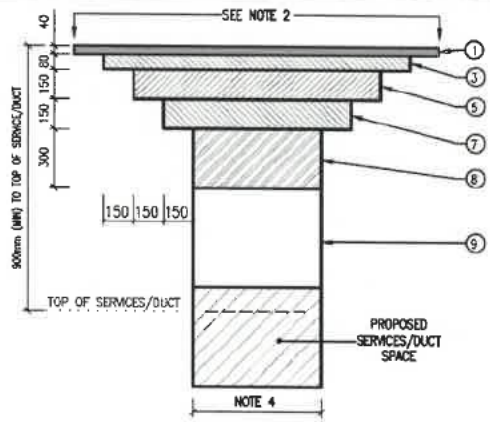
DRAWN BY: VC

CHECKED BY: AL

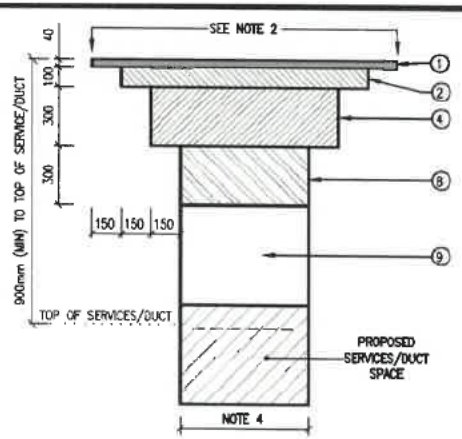
[redacted]



TYPE A1
CLASS 5B–D ROADS
(LOCAL RESIDENTIAL STREETS)



TYPE A2
CLASS 5A & 4 ROADS
(LOCAL COMMERCIAL STREETS & COLLECTORS)



TYPE A3
CLASS 2 & 3 ROADS
(ARTERIALS)

NOTES:

1. THE SPECIFIED LAYER WORKS SHOULD BE CONSIDERED AS A GUIDELINE. ONCE THE EXISTING LAYER WORKS OF THE ROADWAY HAVE BEEN DETERMINED, THE ENGINEER SHALL SUBMIT A FINAL LAYER WORKS REINSTATEMENT PROPOSAL TO THE APPROVAL AUTHORITY.
2. ASPHALT SURFACE LAYERS SHALL BE MECHANICALLY SAW CUT PRIOR TO THE BREAKING UP OF THE EXISTING LAYERS AND AGAIN BEFORE THE PLACING OF THE FINAL ASPHALT LAYER.
3. ASPHALT JOINTS:
   - 3.1. JOINT SHALL BE CUT IN STRAIGHT LINES, PARALLEL OR AT RIGHT ANGLES TO THE CENTERLINE, USING A MECHANICAL SAW CUT.
   - 3.2. LONGITUDINAL ASPHALT JOINTS SHALL NOT BE POSITIONED IN ANY VEHICLE WHEEL–PATHS. JOINTS SHALL BE POSITIONED ON THE LANE MARKING.
   - 3.3. CUT EDGES OF ASPHLAT JOINTS SHALL RECEIVE A COAT OF RUBBERIZED BITUMEN EMULSION ALONG THE ENTIRE VERTICAL FACE, PRIOR TO THE ASPHALT BEING PLACED.
   - 3.4. REFER TO **SECTION 8.5.3** FOR FURTHER DETAILS.
   - 3.5. ALL "COLD" ASPHALT JOINTS TO BE PROPERLY SEALED WITH A WATERPROOFING SEALANT TO PREVENT THE INGRESS OF WATER. THE SEALANT SHALL BE UNDILUTED AND BRUSH–APPLIED AT 0.71L/m², AT A MINIMUM WIDTH OF 100mm.
4. TRENCH WIDTH SHALL DEPEND ON THE REQUIRED SERVICE TO BE INSTALLED.
   - 4.1. FOR STORMWATER, SEWER AND WATER SERVICES, SUFFICIENT SIDE ALLOWANCE SHALL BE PROVIDED, TO ENSURE ADEQUATE COMPACTION.
   - 4.2. FOR SERVICE DUCTS, REFER TO **CHAPTER 13** FOR THE VARIOUS DUCT TYPE REQUIREMENTS AND SPECIFICATIONS.

ROAD LAYER WORKS:

1. 40mm CONTINUOUSLY GRADED ASPHALT SURFACING (93% MAX. VOIDLESS DENSITY)
2. 100mm CONTINUOUSLY GRADED BTB (93% MAX. VOIDLESS DENSITY)
3. 80mm CONTINUOUSLY GRADED BTB (93% MAX. VOIDLESS DENSITY)
4. 300mm C3/C4 CEMENT STABILIZED SUBBASE, CONSTRUCTED IN TWO LAYERS OF 150mm (96% MDD)
5. 150mm G3 BASE (98% MMD)
6. 150mm G4 BASE (98% MMD)
7. 150mm G5 SUBBASE (95% MMD)
8. G7 SELECTED LAYER, CONSTRUCTED IN 150mm LAYERS (93% MDD, 100% FOR SAND)
9. G9 BACKFILLING, COMPACTED IN 150mm LAYERS (90% MDD, 100% FOR SAND)

NOTES: AGGREGATE SAND OR GRANULAR MATERIAL, ALL OF NON–CONHESIVE NATURE AND FREE FROM ALL ORGANIC MATERIAL OF WHICH THE GRADING ANALYSES SHOWS 100% PASSING A 13,2MM SIEVE AND NOT MORE THAN 5% PASSING A 0,075MM SIEVE.
BINDER TYPE FOR ASPHALT LAYERS (SURFACING & BASE) SHALL BE SPECIFIED IN FINAL PROPOSAL.

ROAD CLASSES

CLASS 2 : MAJOR ARTERIAL
CLASS 3 : MINOR ARTERIAL
CLASS 4 : COLLECTOR
CLASS 5A : LOCAL COMMERCIAL STREET
CLASS 5B–D: LOCAL RESIDENTIAL STREETS

SHEET INDEX:

SHEET 1: ROADWAY REINSTATEMENT SPECIFICATIONS
SHEET 2: PEDESTRIAN FOOTWAY REINSTATEMENT SPECIFICATIONS

CITY OF CAPE TOWN
ISIXEKO SASEKAPA
STAD KAAPSTAD

CITY OF CAPE TOWN
URBAN MOBILITY

TITLE

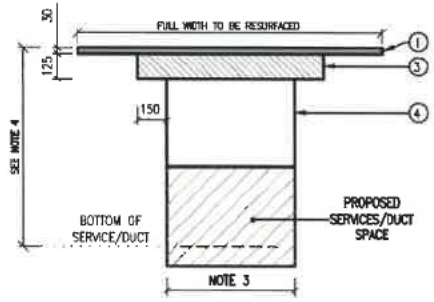
REINSTATEMENT OF SHALLOW TRENCHES IN ROAD RESERVES
TRENCHES IN ROADWAYS

STANDARDS AND GUIDELINES DETAILS

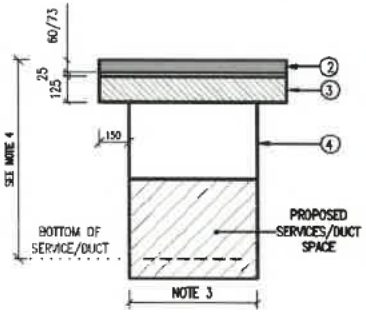
SHEET 1

SCALE	PAPER
N.T.S.	A4
DRAWING No.	REV
RD16.1	C

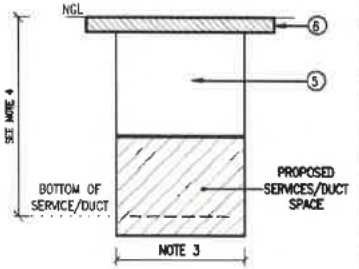
[redacted]



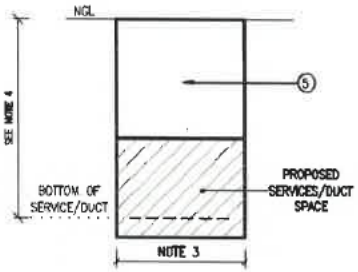
TYPE B1:
PEDESTRIAN FOOTWAY
(ASPHALT)



TYPE B2:
PEDESTRIAN FOOTWAY
(SEGMENTED PAVING)



TYPE B3:
STABILISED GRAVEL WC



TYPE B4:
UNMADE VERGE

NOTES:

1. THE SPECIFIED LAYER WORKS SHOULD BE CONSIDERED AS A GUIDELINE. ONCE THE EXISTING LAYER WORKS OF THE ROADWAY HAVE BEEN DETERMINED, THE ENGINEER SHALL SUBMIT A FINAL LAYER WORKS REINSTATEMENT PROPOSAL TO THE APPROVAL AUTHORITY.
2. WHERE THE WIDTH OF THE FOOTWAY IS LESS THAN 2m, THE ENTIRE WIDTH OF THE SURFACING SHALL BE REPLACED (ONLY APPLICABLE TO ASPHALT FOOTWAYS).
3. ASPHALT JOINTS:
   - 3.1. ALL JOINTS SHALL BE SAW CUT PRIOR TO THE PLACING OF THE NEW ASPHALT LAYER.
   - 3.2. ALL JOINTS SHALL BE CUT PERPENDICULAR ACROSS THE FOOTWAY (NO DIAGONAL JOINTS SHALL BE ACCEPTED).
   - 3.3. REFER TO **SECTION 8.5.3** FOR FURTHER DETAILS.
   - 3.4. ALL "COLD" ASPHALT JOINTS TO BE PROPERLY SEALED WITH A WATERPROOFING SEALANT TO PREVENT THE INGRESS OF WATER. THE SEALANT SHALL BE UNDILUTED AND BRUSH-APPLIED AT 0.71L/m^2, AT A MINIMUM WIDTH OF 100mm.
4. TRENCH WIDTH SHALL DEPEND ON THE REQUIRED SERVICE TO BE INSTALLED.
   - 4.1. FOR STORMWATER, SEWER AND WATER SERVICES, SUFFICIENT SIDE ALLOWANCE SHALL BE PROVIDED, TO ENSURE ADEQUATE COMPACTION.
   - 4.2. FOR SERVICE DUCTS, REFER TO **CHAPTER 13** FOR THE VARIOUS DUCT TYPE REQUIREMENTS AND SPECIFICATIONS.
5. TRENCH DEPTH:
   - 5.1. SHALL BE LIMITED TO 1m FOR TELECOMMUNICATION SERVICES.
   - 5.2. WHERE UNSTABLE GROUND CONDITIONS EXIST, SHORING/PROTECTION SHOULD BE APPLIED IN ORDER TO PROTECT ADJACENT STRUCTURES.

PEDESTRIAN FOOTWAY LAYER WORKS:

1. 30mm CONTINUOUSLY FINE GRADED ASPHALT SURFACING
2. 60/73 PAVING BLOCKS ON 25mm SAND
3. 125mm G5 SUBBASE COMPACTED TO 95% MDD
4. G9 BACKFILLING COMPACTED IN 150mm LAYERS (90% MDD, 100% FOR SAND)
5. BACKFILL MATERIAL TO BE COMPACTED TO 90% OF MDD IN LAYERS NOT EXCEEDING 300mm
6. 75mm STABILISED GRAVEL WEARING COURSE (3-4% CEMENT BY MASS)

NOTES: AGGREGATE SAND OR GRANULAR MATERIAL, ALL OF NON-CONHESIVE NATURE AND FREE FROM ALL ORGANIC MATERIAL OF WHICH THE GRADING ANALYSES SHOWS 100% PASSING A 13,2MM SIEVE AND NOT MORE THAN 5% PASSING A 0,075MM SIEVE.
BINDER TYPE FOR ASPHALT SURFACING SHALL BE SPECIFIED IN FINAL PROPOSAL.

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SHEET 1: ROADWAY REINSTATEMENT SPECIFICATIONS
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CITY OF CAPE TOWN
ISIXEKO SASEKAPA
STAD KAAPSTAD

CITY OF CAPE TOWN
URBAN MOBILITY

TITLE

REINSTATEMENT OF SHALLOW TRENCHES IN ROAD RESERVES
TRENCHES IN PEDESTRIAN FOOTWAYS AND VERGES

STANDARDS AND GUIDELINES DETAILS

SHEET 2

SCALE	PAPER
N.T.S.	A4
DRAWING No.	REV
RD16.2	C

\\CBD-FVC-FS01\Apps\CAD\RWSD\01_01 Design\01_10008 Standards\01_10008 DESIGN_Roads and Stormwater\0002 Drawings_Version3.0\01 RD\RD16.2 - Trench Reinstatement Specifications_RevC.dwg

PART C5: INFORMATION/DOCUMENTATION PROVIDED BY CONTRACTOR

All of the aforementioned information, and drawings as submitted/provided by the Supplier for tender **TENDER 83Q/2023/24: TERM TENDER FOR LAYING OF NEW SEWER MAINS** are incorporated into this Memorandum of agreement by the mere reference thereof.

[redacted]