SANBI
Biodiversity for Life
South African National Biodiversity Institute

SOUTH AFRICAN NATIONAL BIODIVERSITY INSTITUTE (SANBI)

Contract No: G567/2025

REQUEST FOR BIDS FOR THE APPOINTMENT OF A CONTRACTOR FOR THE REPAIRS TO THE EXISTING TIMBER ROOF TRUSSES AND WET SERVICES AT THE KIRSTENBOSCH CENTRE FOR BIODIVERSITY CONSERVATION BUILDING INCLUDING ASSOCIATED CIVIL AND BUILDING WORKS AT THE HARRY MOLTENO LIBRARY AT THE KIRSTENBOSCH NATIONAL BOTANICAL GARDEN, CAPE TOWN: COMPLETION CONTRACT

PROCUREMENT DOCUMENT

DECEMBER 2025

Issued by:

South African National Biodiversity Institute
Private Bag X101
Silverton
0184
Gauteng

Contact:

Supply Chain Management
E-mail: sanbi.tenders@sanbi.org.za

Prepared by:

Virtual Consulting Engineers VCE (PTY) LTD
P.O. Box 82
Crawford
7779
Cape Town

Contact:

Mr R Ishmail
Tel: 021 685 0789
E-mail: rameez@virtualconsulting.co.za

Name of tenderer: .....

Address: .....

Tel no.: ..... **Fax no.:** .....

Email: .....

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PART T: THE TENDER
Part T1: Tendering Procedures

PROJECT TITLE:	**REQUEST FOR BIDS FOR THE APPOINTMENT OF A CONTRACTOR FOR THE REPAIRS TO THE EXISTING TIMBER ROOF TRUSSES AND WET SERVICES AT THE KIRSTENBOSCH CENTRE FOR BIODIVERSITY CONSERVATION BUILDING INCLUDING ASSOCIATED CIVIL AND BUILDING WORKS AT THE HARRY MOLTENO LIBRARY AT THE KIRSTENBOSCH NATIONAL BOTANICAL GARDEN: COMPLETION CONTRACT**
CONTRACT NO:	**SANBI: G567/2025**

Advertising date:	**11 December 2025**	**Closing date:**	**6 February 2026**
Closing time:	**11:00**	**Validity period:**	**90 Days**

T1.1 Tender Notice and Invitation to Tender

THE SOUTH AFRICAN NATIONAL BIODIVERSITY INSTITUTE INVITES TENDERERS FOR THE PROVISION OF:
Requests for bids for the appointment of a contractor for the request for bids for the appointment of a contractor for the repairs to the existing timber roof trusses and wet services at the Kirstenbosch Centre for Biodiversity Conservation Building including associated civil and building Works at the Harry Molteno Library at the Kirstenbosch National Botanical Garden: Completion Contract

It is estimated that tenderers should have a CIDB contractor grading of **4GB** or higher.

Tender documents will be available as from **11 December 2025** and will be available **ONLINE ONLY** on:
- SANBI website www.sanbi.org.za (click on “Opportunities”)
- CIDB Website
- National e-Tender Publication Portal

A compulsory briefing session will take place on site on **20 January 2026 at 11:00** in the Kirstenbosch Research Centre (KRC) in the Harry Molteno Library at the Kirstenbosch National Botanical Garden. Bidders are encouraged to direct all technical and bidding procedure enquiries to the email address below.

Bidders are encouraged to direct all technical and bidding procedure enquiries to the email address below.

Department:	Supply Chain Management
Email:	sanbi.tenders@sanbi.org.za
Cc:	rameez@virtualconsulting.co.za and A.Hendricks@sanbi.org.za
Cut-off date for enquiries:	**28 January 2026**

Any queries regarding the tender document or any related matter prior to submission of tenders must be directed to:

SANBI Representative (Technical Queries Only)	Mr Rameez Ishmail Virtual Consulting Engineers VCE (Pty) Ltd rameez@virtualconsulting.co.za
SANBI SCM Representative	sanbi.tenders@sanbi.org.za

The closing time and date for the receipt of tenders is **11:00** on **6 February 2026.**

The tenders will **NOT** be opened in public (please note that the two-envelope system is being followed). Requirements for sealing, addressing, delivery, opening and assessment of tenders are stated in the Tender Data.

PART T: THE TENDER
Part T1: Tendering Procedures

PROJECT TITLE:	**REQUEST FOR BIDS FOR THE APPOINTMENT OF A CONTRACTOR FOR THE REPAIRS TO THE EXISTING TIMBER ROOF TRUSSES AND WET SERVICES AT THE KIRSTENBOSCH CENTRE FOR BIODIVERSITY CONSERVATION BUILDING INCLUDING ASSOCIATED CIVIL AND BUILDING WORKS AT THE HARRY MOLTENO LIBRARY AT THE KIRSTENBOSCH NATIONAL BOTANICAL GARDEN: COMPLETION CONTRACT**
CONTRACT NO:	**SANBI G567/2025**

T1.2 Tender Data

The conditions of tender are the Standard Conditions of Tender as contained in Annex C of the CIDB Standard for Uniformity in Engineering and Construction Works Contracts – August 2019. (See www.cidb.org.za).

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

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

Clause number	Tender Data
C.1.1.1	The Employer is: South African National Biodiversity Institute (SANBI): The Employer's domicilium citandi et executandi (permanent physical business address) is: Pretoria National Botanical Garden 2 Cussonia Avenue, Biodiversity Centre Brummeria, Pretoria The Employer's address for communication relating to this project is: Private Bag X101 Silverton 0184
C.1.2	The Tender Documents issued by the Employer comprise the following documents: **PART T: THE TENDER** **Part T1: Tendering procedures** T1.1 - Tender notice and invitation to tender T1.2 - Tender data **Part T2: Returnable documents** T2.1 - List of returnable documents T2.2 - Returnable documents/schedules **PART C: THE CONTRACT** **Part C1: Agreements and Contract data** C1.1 - Form of offer and acceptance C1.2 - Contract data C1.3 - Construction guarantee C1.4 - Occupational Health & Safety Agreement 37(2) **Part C2: Pricing Data** C2.1 - Pricing Instructions C2.2 - Bill of Quantities

Clause number	Tender Data
	Part C3: Scope of Works C3.1 - Description of the works C3.2 - Construction **Part C4: Site Information** C4.1 - Site location **Appendices** Appendix A – Technical and Health & Safety Specification Appendix B – Drawings
C.1.4	The employer's agent is: Virtual Consulting Engineers VCE (PTY) LTD **Contact Person: Rameez Ishmail** **Tel:** 021 685 0789 **Fax:** 086 655 2690 **E-mail: rameez@virtualconsulting.co.za**
C.2.1	Only those tenderers who satisfy the following eligibility criteria are eligible to submit tenders Only those tenderers who score the minimum score in respect of the quality criteria stated in C.3.11.1 of this Tender Data shall be considered responsive and have their tenders evaluated further. (a) CIDB registration Only those tenderers who are registered with the CIDB, or are capable of being so prior to the evaluation of submissions, in a contractor grading designation equal to or higher than a contractor grading designation determined in accordance with the sum tendered, or a value determined in accordance with Regulation 25 (1B) or 25(7A) of the Construction Industry Development Regulations, for a **4GB** class of construction work, are eligible to have their tenders evaluated. Joint ventures are eligible to submit tenders provided that: 1. every member of the joint venture is registered with the CIDB; 2. the lead partner has a contractor grading designation in the **4GB** class of construction work; and 3. the combined contractor grading designation calculated in accordance with the Construction Industry Development Regulations is equal to or higher than a contractor grading designation determined in accordance with the sum tendered for a **4GB** class of construction work or a value determined in accordance with Regulation 25 (1B) or 25(7A) of the Construction Industry Development Regulations. (b) National Treasury Central Supplier Database Tenderers who are not registered on the National Treasury Central Supplier Database at close of tender, shall submit a copy of their application of registration, with their tender submission. Tenders received from such tenderers who have not submitted proof of their registration within 21 days after the closing date for tender submissions, will not be considered.
C.2.6	Failure to apply instructions contained in addenda may render a tenderer's offer non-responsive in terms of clause C.3.8.
C.2.7	The arrangements for a compulsory clarification meeting are as stated in the Tender Notice and Invitation to Tender. Tenderers must sign the attendance list in the name of the tendering entity. Addenda will be issued to and tenders will be received only from those tendering entities appearing on the attendance list

Clause number	Tender Data
C.2.8	Request clarifications at least 7 working days before the closing time.
C.2.12	Main tender offers are required to be submitted together with alternative tenders. If a tenderer wishes to submit an alternative tender offer, the only criteria permitted for such alternative tender offer is that it demonstrably satisfies the Employer's standards and requirements, the details of which may be obtained from the Employer's Agent. Calculations, drawings and all other pertinent technical information and characteristics as well as modified or proposed Pricing Data must be submitted with the alternative tender offer to enable the Employer to evaluate the efficacy of the alternative and its principal elements, to take a view on the degree to which the alternative complies with the Employer's standards and requirements and to evaluate the acceptability of the pricing proposals. Calculations must be set out in a clear and logical sequence and must clearly reflect all design assumptions. Pricing Data must reflect all assumptions in the development of the pricing proposal. Acceptance of an alternative tender offer will mean acceptance in principle of the offer. It will be an obligation of the contract for the tenderer, in the event that the alternative is accepted, to accept full responsibility and liability that the alternative offer complies in all respects with the Employer's standards and requirements. The modified Pricing Data must include an amount equal to 5% of the amount tendered for the alternative offer to cover the Employer's costs in confirming the acceptability of the detailed design.
C.2.13.6	A two-envelope procedure will be followed as described in clause C.2.13.7.
C.2.13.7	Tenderers shall note the specific requirements for packaging of their tender documents and include only the following: Two (2) original documents marked original: Document A "FINANCIAL ENVELOPE and Original document B "TECHNICAL ENVELOPE". • Original Document A "FINANCIAL ENVELOPE" pack of original documents with Pricing included e.g. Form of Offer and Acceptance, bill of quantities, costing models and cash flows. • "Original document B "TECHNICAL ENVELOPE" pack of original documents **excluding** pricing e.g. Form of Offer and Acceptance, bill of quantities, costing models and cash flows and a USB with a Copy of "Original Document B" TECHNICAL ENVELOPE excluding pricing e.g. Form of Offer and Acceptance, bill of quantities, costing models and cash flows. Financial or pricing details should **ONLY** be included in the envelope marked 'Original Document A FINANCIAL ENVELOPE", and not in the Original Document B or the PDF file(s) of the document(s) on the USB. **NB:** Failure to submit in the prescribed manner WILL lead to the bid being disqualified. The Service Provider is to ensure that the provided USB includes the proposal, is readable and is not corrupt. Failure to comply will lead to the bid being considered non-responsive. Please put the USB in the "Original Document B TECHNICAL ENVELOPE" (Original Document B and USB in one envelope).

Clause number	Tender Data
	INCLUSION OF ANY PRICING INFORMATION ANYWHERE ON THE USB WILL LEAD TO THE BID BEING DISQUALIFIED. The Original Document A will be placed in one envelope, and the Original Document B and the USB will be placed in another envelope. The two envelopes shall be placed together in an outer envelope sealed and bearing the following: • The address as stated in C.2.15.1 below • The identification details as stated in C.2.15.1 below • Name of the Tenderer • The words 'Not to be opened before the tender opening' The technical and financial envelopes should also contain the details of the last three bullets on them. The financial envelope must contain the words NOT TO BE OPENED WITH THE TECHNICAL ENVELOPE.
C.2.13.9	Telephonic, telegraphic, telex, facsimile or e-mailed tender offers will not be accepted.
C.2.15.1	The Employer's address for delivery of tender offers and identification details to be shown on each tender offer package are: **Location of Tender box:** Biodiversity Centre **Physical address:** Pretoria National Botanical Garden 2 Cussonia Avenue Brummeria Pretoria **Identification details:** Tender number: **SANBI: G567/2025** **Title of Tender:** Request For Bids for the Appointment of a Contractor for the Repairs to the Existing Timber Roof Trusses and Wet Services at the Kirstenbosch Centre for Biodiversity Conservation Building Including Associated Civil and Building Works at the Harry Molteno Library at the Kirstenbosch National Botanical Garden, Cape Town: Completion Contract
C.2.15.2	The closing time for submission of tender offers is as stated in the Tender Notice and Invitation to Tender.
C.2.16.1	The tender offer validity period is **90 days**.
C.2.16.3	Where a tenderer, at any time after the opening of his tender offer but prior to entering into a contract based on his tender offer: (1) withdraws his tender; (2) gives notice of his inability to execute the contract in terms of his tender; or (3) fails to comply with a request made in terms of C.2.17, C.2.18 or C.3.9 such tenderer shall be barred from tendering on any of the Employer's future tenders for a period to be determined by the Employer, but not less than six (6) months, from the date of tender closure. The Employer may fully or partly exempt a tenderer from the provisions of this condition if he is of the opinion that the circumstances justify the exemption
C.2.18	The tenderer shall, when requested by the Employer to do so, submit the names of all management and supervisory staff that will be employed to supervise the Labour-Intensive portion of the works together with satisfactory evidence that such staff members satisfy the eligibility requirements.
C.2.22	Tender Documents will **not be returned** to bidders

Clause number	Tender Data
C.2.23	The tenderer is required to submit with his tender following **(failure to provide below documentation will result in the tender being rejected)**: 1) A copy of the Central Suppliers Database (CSD) registration report. 2) A printed copy of the Active Contractor's Listing off the CIDB website (www.cidb.org.za) 3) Letter of Good Standing from the office of the Compensation Commissioner as required by the Compensation for Occupational Injuries and Diseases Act (COIDA). The letter should be issued by the Department of Labour. 4) In the case of a Joint Venture/Consortium the CSD report, indicating the compliance tax status, must be submitted for each member of the Joint Venture/Consortium." 5) The signed compulsory site briefing certificate. 6) Plant Documentation: Equipment owned by Contractor: registration documents must be provided. or Equipment to be rented (if any): letter of intent to hire with preferred rental companies 7) A professional Construction Health & Safey Officer with more than 5 years' experience with a Valid Professional Registration with **SACPCMP**. CV for proposed professional CHS Officer indicating: • Previous work experience of similar projects in the last five years • Total number of years' working experience in construction • Certified copies of Qualifications or certification or other recognised training courses completed
C.3.1.1	The Employer shall respond to clarifications received up to 7 working days before the tender closing time.
C.3.2	The Employer shall issue addenda until 5 working days before the tender closing time.
C.3.4.1	The tenders will not be opened in public
C.3.5.1	Follow procedure as described in clause C.2.13.7
C.3.7	In the event of disqualification, the Employer may, at his sole discretion, impose a specified period during which tender offers will not be accepted from the offending tenderer and report same to the CIDB and National Treasury.
C.3.11.1	The procedure for the evaluation of responsive tenders is stated in **Annexure A**.
C.3.13	In addition to the requirements of the Condition of Tender, offers will only be accepted if: a) the tenderer submits a copy of the CSD registration report or registration number (refer to T2.1.12); b) the tenderer is registered with the Construction Industry Development Board in an appropriate contractor grading designation (refer to T2.1.11); c) the tenderer or any of its directors/shareholders is not listed on the Register of Tender Defaulters in terms of the Prevention and Combating of Corrupt Activities Act of 2004 as a person prohibited from doing business with the public sector; d) the tenderer has completed the Compulsory Enterprise Questionnaire and there are no conflicts of interest which may impact on the tenderer's ability to perform the contract in the best interests of the employer or potentially compromise the tender process and persons in the employ of the state are permitted to submit tenders or participate in the contract (refer to T2.1.14); e) the tenderer is registered and in good standing with the compensation fund issued by the Department of Labour (Letter of good standing with COIDA); f) the employer is reasonably satisfied that the tenderer has in terms of the Construction Regulations, 2014, issued in terms of the Occupational Health and Safety Act, 1993, the necessary competencies and resources to carry out the work safely.

Clause number	Tender Data
	g) A copy of the CSD report, indicating Tax compliance status h) Plant Documentation: Equipment owned by Contractor: registration documents must be provided. or Equipment to be rented (if any): letter of intent to hire with preferred rental companies i) A professional Construction Health & Safey Officer with more than 5 years' experience with a Valid Professional Registration with **SACPCMP**. CV for proposed professional CHS Officer indicating: • Previous work experience of similar projects in the last five years • Total number of years' working experience in construction • Certified copies of Qualifications or certification or other recognised training courses completed

Annexure A

This annexure contains all the criteria that the Employer shall use to evaluate tenders. In accordance with clause C.3.11 of the Standard conditions of tender. No other factors, methods or criteria shall be used. The tenderer shall provide all the information requested in the forms included in Part T2.2 – Returnable schedules.

Tenders shall be evaluated in three stages as follows:

- Stage 1 – Evaluation of Eligibility and Administrative compliance
- Stage 2 – Evaluation of Functionality
- Stage 3 – Evaluation of Tender Price and Preference

1 Stage 1: Eligibility and Administrative compliance

The first stage will determine whether bids are compliant with all mandatory and disqualifiable submission requirements. Bidders that are deemed compliant will be eligible for further evaluation.

The criteria as identified in Clauses C.2.23 and C.3.13 in the Tender Data will be used to determine the tender's eligibility.

For administrative compliance the tenderers must complete all the returnable forms in Part T2.2, the Bill of Quantities, and the Offer section in Part C1.1.

2 Stage 2: Functionality

The tenderers who complied with the eligibility and administrative criteria in stage 1 are considered for further evaluation on their capability to execute the project.

In this stage tenders will be evaluated on functionality according to the criteria listed below. Tenderers who fail to score a minimum of 70 points out of a possible 100 points on functionality criteria will not be eligible for further consideration.

Scoring quality
The functionality (quality) evaluation criteria are listed below. Maximum points for each criterion are in bold while points for each sub-criterion are indicated in brackets.

FUNCTIONALITY CRITERIA		
ID	**CRITERIA**	**POINTS**
1	**Implementation method and project plan or programme** **(a) Project methodology** • Include the method to be followed in delivering this project, the methodology and approach must be specific to the project and location of works (this should include the PMBOK knowledge areas as well as all relevant project life cycle stages). • Include the team organogram of the people who will be working on the project. • Include the approach to time and quality management of the project. • Include a list of subcontractors (if any) to be utilised for various disciplines and how the work will be dispatched to subcontractors considering the reasonable response times.	**25**

Sub-Criteria	Points
No Methodology	0
Poor Methodology	3
Average Methodology	6
Above Average Methodology	9
Good Methodology	12
Comprehensive (Exceptional) Methodology	15

(15)

(b) Weekly plan/programme with milestones

- The programme should:
- Indicate the sequence of work execution.
- Provide milestones and resources linked to the activity.
- Be practical, realistic and include all activities linked to the project.

Sub-Criteria	Points
No Programme	0
Poor Programme	2
Average Programme	4
Above Average Programme	6
Good Programme	8
Comprehensive (Exceptional) Programme	10

(10)

Note: Bidders must take cognisance of the weather measurements recorded for the last 10 years – Refer site information Section C4.1.2

2

Contractor's Experience **40**

- Three valid, verifiable and positive reference letters (on the client's letterhead, dated, signed and stamped) regarding work of similar scope and scale completed in the last ten (10) years

Sub-Criteria	Points
No valid and positive reference letter	0
One valid and positive reference letter	5
Two valid and positive reference letters	10
Three valid and positive reference letters or more	15

(15)

- List of at least five (5) similar valid and verifiable projects with appointment letters or purchase order (PO), completion certificates and telephonic references indicating work of similar scope and value completed in the last ten (10) years.

Sub-Criteria	Points
No relevant similar and verifiable project	0
One relevant similar and verifiable project	5

(25)

Two relevant similar and verifiable projects	10
Three relevant similar and verifiable projects	15
Four relevant similar and verifiable projects	20
Five relevant similar and verifiable projects	25

- Failure to complete and sign the schedule of the tenderer's experience will result in the bidder forfeiting these points.

Notes:

Supporting documents required to support the claims above, (corresponding orders/appointment letters, completion certificates and reference letters for projects must be submitted as proof). Bidders must submit all the requested documents as proof in order to be awarded the points.

- The submitted documents for the projects (appointment, completion and reference letters) must be valid and verifiable.
- The submitted CVs must be valid and verifiable and original copies of the CVs and any certificates may be requested before appointment.
- SANBI reserves the right to verify the information provided and the bidder shall be notified of such. Additional supporting documents might be requested and should be submitted within the stipulated timeframes.
- SANBI may also conduct site visits to verify the submitted projects. The bidder must make adequate means to enable the verification process.
- Both appointment letters and reference letters must be on the employer's letterhead, dated and signed by the employer.
- ***Failure by the bidder to provide the requested requested documents and make adequate means to conduct site visits for verification shall disqualify the bidder for further evaluation.***

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Contractor's Resources – Personnel
Proposed personnel:
• CVs for proposed key personnel (At least 2 – Contracts Manager & Site Agent) indicating:
o Previous work experience of similar projects
o Total number of years' working experience in construction
o Individual experience on relevant similar work in last five years
o Certified copies of qualifications, professional registration or personnel's certification or other recognised training courses completed
o Valid professional registration (Pr. CPM or Pr CM and not Candidate) for Contracts Manager (SACPCMP).
o The Site Agent must have a national diploma (NQF6 or higher) in the built environment

Contracts Manager
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<tr><td>CV experience of more than 5 years</td><td>5</td></tr>
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<tr><td>CV experience of more than 15 years</td><td>15</td></tr>
<tr><td>CV experience of more than 20 years</td><td>20</td></tr>
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Site Agent
<table>
<tr><th>Sub-Criteria</th><th>Points</th></tr>
<tr><td>CV experience of less than 5 years</td><td>0</td></tr>
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<tr><td>CV experience of more than 15 years</td><td>15</td></tr>
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(20)

(15)</td>
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<td colspan="2">TOTAL</td>
<td>100</td>
</tr>
</table>

Functionality shall be scored by not less than three evaluators in accordance with the following schedules:

Each evaluation criterion will be assessed in terms of five indicators – no response, poor, satisfactory, acceptable, good and very good. Scores ranging from of 0 to 5 will be allocated to no response, very poor, poor, acceptable, good and very good responses, respectively. The scores submitted by each of the evaluators will be averaged, weighted and then totalled to obtain the final score for functionality. The prompts for judgment and the associated scores used in the evaluation of quality shall be as follows:

Score	Prompt for judgement
0	Failed to address the question / issue
1	Very poor response: - response / answer / solution lacks convincing evidence of skill / experience sought or medium risk that relevant skills will not be available.
2	Poor response – some elements of the response / answer / solution are present but documentary evidence is mostly lacking in respect of the required information

3	Acceptable response / answer / solution to the particular aspect of the requirements and evidence given of skill / experience sought
4	Above acceptable - response / answer / solution demonstrating real understanding of requirements and evidence of ability to meet it.
5	Excellent - response / answer / solution provides confidence that the tenderer will add real value to the project.

The minimum number of evaluation points for functionality proposal is **70 points** in order to progress to stage 3 of the evaluation

3 Stage 3: Tender Price and Preference

The tenderers who complied with the functionality criteria in stage 2 are considered for further evaluation in terms of their Tender Price and Preference points.

3.1 Correction of arithmetical errors

Pursuant to clause C.3.9 of the standard conditions of tender as amended in the Tender Data, correction of arithmetical errors shall be undertaken.

3.2 Calculation of score for Tender Price

The score for Tender Price shall be calculated using the following formula:

$$N_F = W_f \times \left[1 - \left(\frac{P_t - P_{min}}{P_{min}}\right)\right]$$

Where:

N_F = the score for Tender Price awarded for the tender under consideration

W_f = the weighting given to financial offer, determined as follows:

- 90 where the Tender Price, inclusive of VAT, of all responsive tender offers received has a value in excess of R50 000 000,00; or
- 80 where the Tender Price, inclusive of VAT, of one or more responsive tender offers has a value that equals or is less than R50 000 000,00.

P_t = Tender Price of the tender under consideration

P_{min} = Tender Price of the lowest responsive tender

In the event that the calculated value of N_F is negative, the allocated score shall be 0

3.3 Financial and Preference

After calculation of the scores for Tender Price and for Preference, a combined score will be calculated as follows:

NT = NF + NP

Where:

NT = Total score for tender under consideration

NF = Score for Tender Price

NP = Score for Preference

The tender with the highest score should be recommended for appointment.

SANBI reserves the right, at its sole discretion to award this tender to a bidder that did not score the highest total number of points, only in accordance with section 2(1)(f) of the PPPFA (Act 5 of 2000)as per below objective criterion:

- **Not to appoint any service provider that has demonstrated unsatisfactory performance in any previous or current contract with SANBI or any other organ of state.**

- **SANBI reserves the right to obtain and consider additional information regarding a bidder's past performance, even if such information is not included in the bid's returnable documents.**

Annexure C
Standard Conditions of Tender

C.1 General

C.1.1 Actions

C.1.1.1 The employer and each tenderer submitting a tender offer shall comply with these conditions of tender. In their dealings with each other, they shall discharge their duties and obligations as set out in C.2 and C.3, timeously and with integrity, and behave equitably, honestly and transparently, comply with all legal obligations and not engage in anticompetitive practices.

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

Note: *1) A conflict of interest may arise due to a conflict of roles which might provide an incentive for improper acts in some circumstances. A conflict of interest can create an appearance of impropriety that can undermine confidence in the ability of that person to act properly in his or her position even if no improper acts result.*

2) Conflicts of interest in respect of those engaged in the procurement process include direct, indirect or family interests in the tender or outcome of the procurement process and any personal bias, inclination, obligation, allegiance or loyalty which would in any way affect any decisions taken.

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

C.1.2 Tender Documents

The documents issued by the employer for the purpose of a tender offer are listed in the tender data.

C.1.3 Interpretation

C.1.3.1 The tender data and additional requirements contained in the tender schedules that are included in the returnable documents are deemed to be part of these conditions of tender.

C.1.3.2 These conditions of tender, the tender data and tender schedules which are required for tender evaluation purposes, shall form part of any contract arising from the invitation to tender.

C.1.3.3 For the purposes of these conditions of tender, the following definitions apply:

a) **conflict of interest** means any situation in which:

i) someone in a position of trust has competing professional or personal interests which make it difficult to fulfil his or her duties impartially;

ii) an individual or tenderer is in a position to exploit a professional or official capacity in some way for their personal or corporate benefit; or

iii) incompatibility or contradictory interests exist between an employee and the tenderer who employs that employee.

b) **comparative offer** means the price after the factors of a non-firm price and all unconditional discounts it can be utilised to have been taken into consideration;

c) **corrupt practice** means the offering, giving, receiving or soliciting of anything of value to influence the action of the employer or his staff or agents in the tender process;

d) **fraudulent practice** means the misrepresentation of the facts in order to influence the tender process or the award of a contract arising from a tender offer to the detriment of the employer, including collusive practices intended to establish prices at artificial levels;

C.1.4 Communication and employer's agent

Each communication between the employer and a tenderer shall be to or from the employer's agent only, and in a form that can be readily read, copied and recorded. Communications shall be in the English language. The employer shall not take any responsibility for non-receipt of communications from or by a tenderer. The name and contact details of the employer's agent are stated in the tender data.

C.1.5 Cancellation and Re-Invitation of Tenders

C.1.5.1 An employer may, prior to the award of the tender, cancel a tender if-

a) due to changed circumstances, there is no longer a need for the engineering and construction works specified in the invitation;

b) funds are no longer available to cover the total envisaged expenditure; or

c) no acceptable tenders are received.

d) there is a material irregularity in the tender process.

C.1.5.2 The decision to cancel a tender invitation must be published in the same manner in which the original tender invitation was advertised

C.1.5.3 An employer may only with the prior approval of the relevant treasury cancel a tender invitation for the second time.

C.1.6 Procurement procedures

C.1.6.1 General

Unless otherwise stated in the tender data, a contract will, subject to C.3.13, be concluded with the tenderer who in terms of C.3.11 is the highest ranked or the tenderer scoring the highest number of tender evaluation points, as relevant, based on the tender submissions that are received at the closing time for tenders.

C.1.6.2 Competitive negotiation procedure

C.1.6.2.1 Where the tender data require that the competitive negotiation procedure is to be followed, tenderers shall submit tender offers in response to the proposed contract in the first round of submissions. Notwithstanding the requirements of C.3.4, the employer shall announce only the names of the tenderers who make a submission. The requirements of C.3.8 relating to the material deviations or qualifications which affect the competitive position of tenderers shall not apply.

C.1.6.2.2 All responsive tenderers or at least a minimum of not less than three responsive tenderers that are highest ranked in terms of the evaluation criteria stated in the tender data shall be invited to enter into competitive negotiations based on the principle of equal treatment, keeping confidential the proposed solutions and associated information.

Notwithstanding the provisions of C.2.17, the employer may request that tenders be clarified, specified and fine-tuned in order to improve a tenderer's competitive position provided that such clarification, specification, fine-tuning or additional information does not alter any fundamental aspects of the offers or impose substantial new requirements which restrict or distort competition or have a discriminatory effect.

C.1.6.2.3 At the conclusion of each round of negotiations, tenderers shall be invited by the employer to revise their tender offer based on the same evaluation criteria, with or without adjusted weightings. Tenderers shall be advised when they are to submit their best and final offer.

C.1.6.2.4 The contract shall be awarded in accordance with the provisions of C.3.11 and C.3.13 after tenderers have been requested to submit their best and final offer.

C.1.6.3 Proposal procedure using the two stage-system

C.1.6.3.1 Option 1

Tenderers shall in the first stage submit technical proposals and, if required, cost parameters around which a contract may be negotiated. The employer shall evaluate each responsive submission in terms of the method of evaluation stated in the tender data, and in the second stage negotiate a

contract with the tenderer scoring the highest number of evaluation points and award the contract in terms of these conditions of tender.

C.1.6.3.2 Option 2

C.1.6.3.2.1 Tenderers shall submit in the first stage only technical proposals. The employer shall invite all responsive tenderers to submit tender offers in the second stage, following the issuing of procurement documents.

C.1.6.3.2.2 The employer shall evaluate tenders received during the second stage in terms of the method of evaluation stated in the tender data, and award the contract in terms of these conditions of tender.

C.2 Tenderer's obligations

C.2.1 Eligibility

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

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

C.2.2 Cost of tendering

C.2.2.1 Accept that, unless otherwise stated in the tender data, the employer will not compensate the tenderer for any costs incurred in the preparation and submission of a tender offer, including the costs of any testing necessary to demonstrate that aspects of the offer complies with requirements.

C.2.2.2 The cost of the tender documents charged by the employer shall be limited to the actual cost incurred by the employer for printing the documents. Employers must attempt to make available the tender documents on its website so as not to incur any costs pertaining to the printing of the tender documents.

C.2.3 Check documents

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

C.2.4 Confidentiality and copyright of documents

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

C.2.5 Reference documents

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

C.2.6 Acknowledge addenda

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

C.2.7 Clarification meeting

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

C.2.8 Seek clarification

Request clarification of the tender documents, if necessary, by notifying the employer at least five (5) working days before the closing time stated in the tender data.

C.2.9 Insurance

Be aware that the extent of insurance to be provided by the employer (if any) might not be for the full cover required in terms of the conditions of contract identified in the contract data. The tenderer is advised to seek qualified advice regarding insurance.

C.2.10 Pricing the tender offer

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

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

C.2.10.3 Provide rates and prices that are fixed for the duration of the contract and not subject to adjustment except as provided for in the conditions of contract identified in the contract data.

C.2.10.4 State the rates and prices in Rand unless instructed otherwise in the tender data. The conditions of contract identified in the contract data may provide for part payment in other currencies.

C.2.11 Alterations to documents

Do not make any alterations or additions to the tender documents, except to comply with instructions issued by the employer, or necessary to correct errors made by the tenderer. All signatories to the tender offer shall initial all such alterations.

C.2.12 Alternative tender offers

C.2.12.1 Unless otherwise stated in the tender data, submit alternative tender offers only if a main tender offer, strictly in accordance with all the requirements of the tender documents, is also submitted as well as a schedule that compares the requirements of the tender documents with the alternative requirements that are proposed.

C.2.12.2 Accept that an alternative tender offer must be based only on the criteria stated in the tender data or criteria otherwise acceptable to the employer.

C.2.12.3 An alternative tender offer must only be considered if the main tender offer is the winning tender.

C.2.13 Submitting a tender offer

C.2.13.1 Submit one tender offer only, either as a single tendering entity or as a member in a joint venture to provide the whole of the works identified in the contract data and described in the scope of works, unless stated otherwise in the tender data.

C.2.13.2 Return all returnable documents to the employer after completing them in their entirety, either electronically (if they were issued in electronic format) or by writing legibly in non-erasable ink.

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

C.2.13.4 Sign the original and all copies of the tender offer where required in terms of the tender data. The employer will hold all authorized signatories liable on behalf of the tenderer. Signatories for tenderers proposing to contract as joint ventures shall state which of the signatories is the lead partner whom the employer shall hold liable for the purpose of the tender offer.

C.2.13.5 Seal the original and each copy of the tender offer as separate packages marking the packages as "ORIGINAL" and "COPY". Each package shall state on the outside the employer's address and identification details stated in the tender data, as well as the tenderer's name and contact address.

C.2.13.6 Where a two-envelope system is required in terms of the tender data, place and seal the returnable documents listed in the tender data in an envelope marked “financial proposal” and place the remaining returnable documents in an envelope marked “technical proposal”. Each envelope shall state on the outside the employer’s address and identification details stated in the tender data, as well as the tenderer's name and contact address.

C.2.13.7 Seal the original tender offer and copy packages together in an outer package that states on the outside only the employer's address and identification details as stated in the tender data.

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

C.2.13.9 Accept that tender offers submitted by facsimile or e-mail will be rejected by the employer, unless stated otherwise in the tender data.

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

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

C.2.15 Closing time

C.2.15.1 Ensure that the employer receives the tender offer at the address specified in the tender data not later than the closing time stated in the tender data. Accept that proof of posting shall not be accepted as proof of delivery.

C.2.15.2 Accept that, if the employer extends the closing time stated in the tender data for any reason, the requirements of these conditions of tender apply equally to the extended deadline.

C.2.16 Tender offer validity

C.2.16.1 Hold the tender offer(s) valid for acceptance by the employer at any time during the validity period stated in the tender data after the closing time stated in the tender data.

C.2.16.2 If requested by the employer, consider extending the validity period stated in the tender data for an agreed additional period with or without any conditions attached to such extension.

C.2.16.3 Accept that a tender submission that has been submitted to the employer may only be withdrawn or substituted by giving the employer's agent written notice before the closing time for tenders that a tender is to be withdrawn or substituted. If the validity period stated in C.2.16 lapses before the employer evaluating tender, the contractor reserves the right to review the price based on Consumer Price Index (CPI).

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

C.2.17 Clarification of tender offer after submission

Provide clarification of a tender offer in response to a request to do so from the employer during the evaluation of tender offers. This may include providing a breakdown of rates or prices and correction of arithmetical errors by the adjustment of certain rates or item prices (or both). No change in the competitive position of tenderers or substance of the tender offer is sought, offered, or permitted.

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

C.2.18 Provide other material

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

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

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

C.2.19 Inspections, tests and analysis

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

C.2.20 Submit securities, bonds and policies

If requested, submit for the employer's acceptance before formation of the contract, all securities, bonds, guarantees, policies and certificates of insurance required in terms of the conditions of contract identified in the contract data.

C.2.21 Check final draft

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

C.2.22 Return of other tender documents

If so instructed by the employer, return all retained tender documents within twenty-eight (28) days after the expiry of the validity period stated in the tender data.

C.2.23 Certificates

Include in the tender submission or provide the employer with any certificates as stated in the tender data.

C.3 The employer's undertakings

C.3.1 Respond to requests from the tenderer

C.3.1.1 Unless otherwise stated in the tender Data, respond to a request for clarification received up to five (5) working days before the tender closing time stated in the Tender Data and notify all tenderers who collected tender documents.

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

a) an individual firm, or a joint venture as a whole, or any individual member of the joint venture fails to meet any of the collective or individual qualifying requirements;

b) the new partners to a joint venture were not prequalified in the first instance, either as individual firms or as another joint venture; or

c) in the opinion of the Employer, acceptance of the material change would compromise the outcome of the prequalification process.

C.3.2 Issue Addenda

If necessary, issue addenda that may amend or amplify the tender documents to each tenderer during the period from the date that tender documents are available until three (3) working days before the tender closing time stated in the Tender Data. If, as a result a tenderer applies for an extension to the closing time stated in the Tender Data, the Employer may grant such extension and, shall then notify all tenderers who collected tender documents.

C.3.3 Return late tender offers

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

C.3.4 Opening of tender submissions

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

C.3.4.2 Announce at the meeting held immediately after the opening of tender submissions, at a venue indicated in the tender data, the name of each tenderer whose tender offer is opened and, where applicable, the total of his prices, number of points claimed for specific goals and time for completion for the main tender offer only.

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

C.3.5 Two-envelope system

C.3.5.1 Where stated in the tender data that a two-envelope system is to be followed, open only the technical proposal of valid tenders in the presence of tenderers' agents who choose to attend at the time and place stated in the tender data and announce the name of each tenderer whose technical proposal is opened.

C.3.5.2 Evaluate functionality of the technical proposals offered by tenderers, then advise tenderers who remain in contention for the award of the contract of the time and place when the financial proposals will be opened. Open only the financial proposals of tenderers, who score in the functionality evaluation more than the minimum number of points for functionality stated in the tender data, and announce the score obtained for the technical proposals and the total price and any points claimed on Specific Goals.

C.3.6 Non-disclosure

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

C.3.7 Grounds for rejection and disqualification

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

C.3.8 Test for responsiveness

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

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

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

a) detrimentally affect the scope, quality, or performance of the works, services or supply identified in the Scope of Work,
b) significantly change the Employer's or the tenderer's risks and responsibilities under the contract, or
c) affect the competitive position of other tenderers presenting responsive tenders, if it were to be rectified.

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

C.3.9 Arithmetical errors, omissions and discrepancies

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

C.3.9.2 Check the highest ranked tender or tenderer with the highest number of tender evaluation points after the evaluation of tender offers in accordance with C.3.11 for:

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

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

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

a) If bills of quantities or pricing schedules apply and there is an error in the line item total resulting from the product of the unit rate and the quantity, the line item total shall govern and the rate shall be corrected. Where there is an obviously gross misplacement of the decimal point in the unit rate, the line item total as quoted shall govern, and the unit rate shall be corrected.

b) Where there is an error in the total of the prices either as a result of other corrections required by this checking process or in the tenderer's addition of prices, the total of the prices shall govern and the tenderer will be asked to revise selected item prices (and their rates if bills of quantities apply) to achieve the tendered total of the prices.

C.3.10 Clarification of a tender offer

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

C.3.11 Evaluation of tender offers

The Standard Conditions of Tender standardize the procurement processes, methods and procedures from the time that tenders are invited to the time that a contract is awarded. They are generic in nature and are made project specific through choices that are made in developing the Tender Data associated with a specific project.

Conditions of tender are by definition the document that establishes a tenderer's obligations in submitting a tender and the employer's undertakings in soliciting and evaluating tender offers. Such conditions establish the rules from the time a tender is advertised to the time that a contract is awarded and require employers to conduct the process of offer and acceptance in terms of a set of standard procedures.

The CIDB Standard Conditions of Tender are based on a procurement system that satisfies the following system requirements:	
Requirement	**Qualitative interpretation of goal**
Fair	The process of offer and acceptance is conducted impartially without bias, providing simultaneous and timely access to participating parties to the same information.
Equitable	Terms and conditions for performing the work do not unfairly prejudice the interests of the parties.
Transparent	The only grounds for not awarding a contract to a tenderer who satisfies all requirements are restrictions from doing business with the employer, lack of capability or capacity, legal impediments and conflicts of interest.
Competitive	The system provides for appropriate levels of competition to ensure cost effective and best value outcomes.
Cost effective	Cost effective

The activities associated with evaluating tender offers are as follows:

a) Open and record tender offers received
b) Determine whether or not tender offers are complete
c) Determine whether or not tender offers are responsive
d) Evaluate tender offers
e) Determine if there are any grounds for disqualification
f) Determine acceptability of preferred tenderer
g) Prepare a tender evaluation report
h) Confirm the recommendation contained in the tender evaluation report

C.3.11.1 General

The employer must appoint an evaluation panel of not less than three persons conversant with the proposed scope of works to evaluate each responsive tender offer using the tender evaluation methods and associated evaluation criteria and weightings that are specified in the tender data.

C.3.12 Insurance provided by the employer

If requested by the proposed successful tenderer, submit for the tenderer*'s* information the policies and / or certificates of insurance which the conditions of contract identified in the contract data, require the employer to provide.

C.3.13 Acceptance of tender offer

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

a) is not under restrictions, or has principals who are under restrictions, preventing participating in the employer's procurement;

b) can, as necessary and in relation to the proposed contract, demonstrate that he or she possesses the professional and technical qualifications, professional and technical competence, financial resources, equipment and other physical facilities, managerial capability, reliability, experience and reputation, expertise and the personnel, to perform the contract;

c) has the legal capacity to enter into the contract;

d) is not; insolvent, in receivership, under Business Rescue as provided for in chapter 6 of the Companies Act No. 2008, bankrupt or being wound up, has his/her affairs administered by a court or a judicial officer, has suspended his/her business activities or is subject to legal proceedings in respect of any of the foregoing;

e) complies with the legal requirements, if any, stated in the tender data; and

f) is able, in the opinion of the employer, to perform the contract free of conflicts of interest.

C.3.14 Prepare contract documents

C.3.14.1 If necessary, revise documents that shall form part of the contract and that were issued by the employer as part of the tender documents to take account of:

a) addenda issued during the tender period,

b) inclusion of some of the returnable documents and

c) other revisions agreed between the employer and the successful tenderer.

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

C.3.15 Complete adjudicator's contract

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

C.3.16 Registration of the award

An employer must, within twenty-one (21) working days from the date on which a contractor's offer to perform a construction works contract is accepted in writing by the employer, register and publish the award on the CIDB Register of Projects.

C.3.17 Provide copies of the contracts

Provide to the successful tenderer the number of copies stated in the Tender Data of the signed copy of the contract as soon as possible after completion and signing of the form of offer and acceptance.

C.3.18 Provide written reasons for actions taken

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

PART T: THE TENDER
Part T2: Returnable Documents

PROJECT TITLE:	**REQUEST FOR BIDS FOR THE APPOINTMENT OF A CONTRACTOR FOR THE REPAIRS TO THE EXISTING TIMBER ROOF TRUSSES AND WET SERVICES AT THE KIRSTENBOSCH CENTRE FOR BIODIVERSITY CONSERVATION BUILDING INCLUDING ASSOCIATED CIVIL AND BUILDING WORKS AT THE HARRY MOLTENO LIBRARY AT THE KIRSTENBOSCH NATIONAL BOTANICAL GARDEN: COMPLETION CONTRACT**
CONTRACT NO:	**SANBI G567/2025**

T2.1 List of Returnable Documents

1. RETURNABLE SCHEDULES REQUIRED FOR TENDER EVALUATION PURPOSES

Tender document name	Number of pages issued	Returnable document
Resolution of Board of Directors (T2.1.01)	1 Page	■ Yes □ No
Resolution of Board of Directors to enter into consortia or JV's (T2.1.02) (If Applicable)	2 Pages	■ Yes □ No
Special Resolution of Consortia or JV's (T2.1.03) (If Applicable)	3 Pages	■ Yes □ No
Schedule of proposed sub-contractors (T2.1.04)	1 Page	■ Yes □ No
Capacity of Tenderer (T2.1.05)	3 Pages	■ Yes □ No
Preference points claim form in terms of the Preferential Procurement Regulations 2022 (T2.1.06)	6 Pages	■ Yes □ No
Resources to be employed in terms of organization and staffing (T2.1.07)	2 Pages	■ Yes □ No
Estimated Monthly Expenditure (T2.1.08)	1 Page	■ Yes □ No
Compensation of Occupational Injuries and Disease Act (COIDA) (T2.1.18)	1 Page	■ Yes □ No

2. OTHER DOCUMENTS REQUIRED FOR TENDER EVALUATION PURPOSES

Tender document name	Number of pages issued	Returnable document
Bidders Disclosure (T2.1.10)	2 Pages	■ Yes □ No
Medical Certificate for the confirmation of permanent disabled status (T2.1.11)	1 Page	■ Yes □ No
Proof of registration with Construction Industry Development Board (T2.1.12)	1 Page	■ Yes □ No
Copy of CSD Registration Certificate (T2.1.14)	1 Page	■ Yes □ No
Financial Reference (T2.1.15)	1 Page	■ Yes □ No
Equipment Datasheets (T2.1.20)	1 Page	■ Yes □ No
Proof of Liability Insurance (T2.1.22)	1 Page	■ Yes □ No

3. RETURNABLE SCHEDULES THAT WILL BE INCORPORATED INTO THE CONTRACT

Tender document name	Number of pages issued	Returnable document
Record of Addenda to Tender Documents (T2.1.16)	1 Page	■ Yes □ No
Compulsory Enterprise Questionnaire (T2.1.17)	3 Pages	■ Yes □ No

4. OTHER DOCUMENTS THAT WILL BE INCORPORATED INTO THE CONTRACT

Tender document name	Number of pages issued	Returnable document
Applicable Form of Guarantee	3 Pages	■ Yes □ No
Priced Bill of Quantities	59 Pages	■ Yes □ No

C1.1 Offer portion of Form of Offer and Acceptance
C1.2 Contract Data (Part 2)
C1.3 Form of Guarantee

RETURNABLE DOCUMENT CHECKLIST

This form has been created as an aid to ensure a tenderer's compliance with the completion of the returnable schedules and subsequent placement in the correct **Technical** and **Financial** envelopes.

A FINANCIAL ENVELOPE (ORIGINAL TENDER DOCUMENT INCLUDING ALL PRICING & RETURNABLES)

The entire original tender document must be submitted in this envelope including the forms as listed below:

Reference No	Document Description	Tick if completed
Form C1.1	Form of Offer and Acceptance	
Form C1.2	Contract Data – Part 1	
Form C2.2	Priced Bill of Quantities	
Form T2.1.08	Estimated Monthly Expenditure	

B TECHNICAL ENVELOPE (ORIGINAL DOCUMENT + USB AND EXCLUDING PRICING)

Reference No	Document Description	Tick if completed
T2.1.01	Resolution of Board of Directors	
T2.1.02	Resolution of Board of Directors to enter into consortia or JV's (If Applicable)	
T2.1.03	Special Resolution of Consortia or JV's (If Applicable)	
T2.1.04	Schedule of proposed sub-contractors	
T2.1.05	Capacity of Tenderer	
T2.1.06	Preference points claim form in terms of the Preferential Procurement Regulations 2022	
T2.1.07	Resources to be employed in terms of organization and staffing	
T2.1.09	Site Inspection Certificate	
T2.1.10	Bidders Disclosure	
T2.1.11	Medical Certificate for the confirmation of permanent disabled status	
T2.1.12	Proof of registration with Construction Industry Development Board (T2.1.12)	
T2.1.13	Original Valid Tax Clearance Certificate	
T2.1.14	CSD Registration Report	
T2.1.15	Financial Reference	
T2.1.16	Record of Addenda to Tender Documents	
T2.1.17	Compulsory Enterprise Questionnaire	
T2.1.18	Compensation of Occupational Injuries and Disease Act (COIDA)	
T2.1.22	Proof of Liability Insurance	

PART T: THE TENDER
Part T2: Returnable Documents

PROJECT TITLE:	**REQUEST FOR BIDS FOR THE APPOINTMENT OF A CONTRACTOR FOR THE REPAIRS TO THE EXISTING TIMBER ROOF TRUSSES AND WET SERVICES AT THE KIRSTENBOSCH CENTRE FOR BIODIVERSITY CONSERVATION BUILDING INCLUDING ASSOCIATED CIVIL AND BUILDING WORKS AT THE HARRY MOLTENO LIBRARY AT THE KIRSTENBOSCH NATIONAL BOTANICAL GARDEN: COMPLETION CONTRACT**
CONTRACT NO:	**SANBI G567/2025**

T2.2 Returnable documents/Schedules

T2.1.01: RESOLUTION OF BOARD OF DIRECTORS

RESOLUTION of a meeting of the Board of *Directors / Members / Partners of:

.....

.....
(*legally correct full name and registration number, if applicable, of the Enterprise)*

Held at ..... (place)

On ..... (date)

RESOLVED that:

1. The Enterprise submits a Bid / Tender to the South African National Biodiversity Institute in respect of the following project:

   .....

   .....
   (*project description as per Bid / Tender Document)*

   Bid / Tender Number: ..... *(Bid / Tender Number as per Bid / Tender Document)*

2. *Mr/Mrs/Ms: .....

   in *his/her Capacity as: ..... *(Position in the Enterprise)*

   and who will sign as follows: .....

   be, and is hereby, authorised to sign the Bid / Tender, and any and all other documents and/or correspondence in connection with and relating to the Bid / Tender, as well as to sign any Contract, and any and all documentation, resulting from the award of the Bid / Tender to the Enterprise mentioned above.

	Name	Capacity	Signature
1			
2			
3			
4			

Note:

1. ** Delete which is not applicable*
2. ***NB**. This resolution must be signed by all the Directors / Members / Partners of the Bidding Enterprise.*
3. *Should the number of Directors / Members/Partners exceed the space available above, additional names and signatures must be supplied on a separate page.*

ENTERPRISE STAMP

T2.1.02: RESOLUTION OF BOARD OF DIRECTORS TO ENTER INTO CONSORTIA OR JOINT VENTURES

RESOLUTION of a meeting of the Board of *Directors / Members / Partners of:

.....

.....
(*Legally correct full name and registration number, if applicable, of the Enterprise)*

Held at ..... (place)

On ..... (date)

RESOLVED that:

1. The Enterprise submits a Bid /Tender, in consortium/Joint Venture with the following Enterprises:

   .....

   .....
   (List all the legally correct full names and registration numbers, if applicable, of the Enterprises forming the Consortium/Joint Venture)

   to the South African National Biodiversity Institute in respect of the following project:

   .....

   .....
   (*Project description as per Bid /Tender Document)*

   Bid / Tender Number: ..... *(Bid / Tender Number as per Bid / Tender Document)*

2. *Mr/Mrs/Ms: .....

   in *his/her Capacity as: ..... *(Position in the Enterprise)*

   and who will sign as follows: .....

   be, and is hereby, authorised to sign a consortium/joint venture agreement with the parties listed under item 1 above, and any and all Other documents and/or correspondence in connection with and relating to the consortium/joint venture, in respect of the project described under item 1 above.

3. The Joint Venture formation/arrangement will be in the following proportions:

Name of Contractor	Proportion (%)

4. The Enterprise accepts joint and several liability with the parties listed under item 1 above for the due fulfilment of the obligations of the joint venture deriving from, and in any way connected with, the Contract to be entered into with the Employer in respect of the project described under item 1 above.

5. The Enterprise chooses as its *domicilium citandi et executandi* for all purposes arising from this joint venture agreement and the Contract with the Employer in respect of the project under item 1 above:

   Physical address: .....

   .....

   ..... (code)

   Postal address: .....

   .....

   ..... (code)

   Telephone number: ..... (code)

   Fax number: ..... (code)

	Name	Capacity	Signature
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

Note:

1. ** Delete which is not applicable.*
2. ***NB**. This resolution must be signed by all the Directors / Members / Partners of the Bidding Enterprise.*
3. *Should the number of Directors / Members / Partners exceed the space available above, additional names and signatures must be supplied on a separate page.*

ENTERPRISE STAMP

T2.1.03: SPECIAL RESOLUTION OF CONSORTIA OR JOINT VENTURES

RESOLUTION of a meeting of the duly authorised representatives of the following legal entities who have entered into a consortium/joint venture to jointly bid for the project mentioned below: (*legally correct full names and registration numbers, if applicable, of the Enterprises forming a Consortium/Joint Venture)*

1. .....

   .....

2. .....

   .....

3. .....

   .....

4. .....

   .....

5. .....

   .....

6. .....

   .....

7. .....

   .....

8. .....

   .....

Held at ..... (place)

On ..... (date)

RESOLVED that:

A. The above-mentioned Enterprises submit a Bid in Consortium/Joint Venture to the South African National Biodiversity Institute in respect of the following project:

   .....

   .....
   (*Project description as per Bid /Tender Document)*

   Bid / Tender Number: ..... *(Bid / Tender Number as per Bid / Tender Document)*

   *Mr/Mrs/Ms: .....

   in *his/her Capacity as: ..... *(Position in the Enterprise)*

   and who will sign as follows: .....

be, and is hereby, authorised to sign the Bid, and any and all other documents and/or correspondence in connection with and relating to the Bid, as well as to sign any Contract, and any and all documentation, resulting from the award of the Bid to the Enterprises in Consortium/Joint Venture mentioned above.

B. The Enterprises constituting the Consortium/Joint Venture, notwithstanding its composition, shall conduct all business under the name and style of: .....

C. The Enterprises to the Consortium/Joint Venture accept joint and several liabilities for the due fulfilment of the obligations of the Consortium/Joint Venture deriving from, and in any way connected with, the Contract entered into with the Employer in respect of the project described under item A above.

D. Any of the Enterprises to the Consortium/Joint Venture intending to terminate the consortium/joint venture agreement, for whatever reason, shall give the Employer 30 day's written notice of such intention. Notwithstanding such decision to terminate, the Enterprises shall remain jointly and severally liable to the Employer for the due fulfilment of the obligations of the Consortium/Joint Venture as mentioned under item D above.

E. No Enterprise to the Consortium/Joint Venture shall, without the prior written consent of the other Enterprises to the Consortium/Joint Venture and of the Employer, cede any of its rights or assign any of its obligations under the consortium/joint venture agreement in relation to the Contract with the Employer referred to herein.

F. The Enterprises choose as the *domicilium citandi et executandi* of the Consortium/Joint Venture for all purposes arising from the consortium/joint venture agreement and the Contract with the Employer in respect of the project under item A above:

Physical address:.....

.....

..... (code)

Postal address: .....

.....

..... (code)

Telephone number: ..... (code)

Fax number: ..... (code)

	Name	Capacity	Signature
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			

Note:

1. ** Delete which is not applicable.*
2. ***NB**. This resolution must be signed by all the Duly Authorised Representatives of the Legal Entities to the Consortium Joint Venture submitting this Bid.*
3. *Should the number of Duly Authorised Representatives of the Legal Entities joining forces in this Bid exceed the space available above, additional names and signatures must be supplied on a separate page.*
4. *Resolutions, duly completed and signed, from the separate Enterprises who participate in this Consortium/Joint Venture must be attached to the Special Resolution.*

T2.1.04: SCHEDULE OF PROPOSED SUBCONTRACTORS

PROJECT TITLE:	**REQUEST FOR BIDS FOR THE APPOINTMENT OF A CONTRACTOR FOR THE REPAIRS TO THE EXISTING TIMBER ROOF TRUSSES AND WET SERVICES AT THE KIRSTENBOSCH CENTRE FOR BIODIVERSITY CONSERVATION BUILDING INCLUDING ASSOCIATED CIVIL AND BUILDING WORKS AT THE HARRY MOLTENO LIBRARY AT THE KIRSTENBOSCH NATIONAL BOTANICAL GARDEN: COMPLETION CONTRACT**
CONTRACT NO:	**SANBI G567/2025**

We notify you that it is our intention to employ the following Subcontractors for work in this contract.

If we are awarded a contract we agree that this notification does not change the requirement for us to submit the names of proposed Subcontractors in accordance with requirements in the contract for such appointments. If there are no such requirements in the contract, then your written acceptance of this list shall be binding between us.

	Name and address of proposed Subcontractor	**Nature and extent of work**	**Previous experience with Subcontractor**
1			
2			
3			
4			

Name of representative	**Signature**	**Capacity**	**Date**

Name of organisation:	

T2.1.05: CAPACITY OF TENDERER

PROJECT TITLE:	**REQUEST FOR BIDS FOR THE APPOINTMENT OF A CONTRACTOR FOR THE REPAIRS TO THE EXISTING TIMBER ROOF TRUSSES AND WET SERVICES AT THE KIRSTENBOSCH CENTRE FOR BIODIVERSITY CONSERVATION BUILDING INCLUDING ASSOCIATED CIVIL AND BUILDING WORKS AT THE HARRY MOLTENO LIBRARY AT THE KIRSTENBOSCH NATIONAL BOTANICAL GARDEN: COMPLETION CONTRACT**
CONTRACT NO:	**SANBI G567/2025**

1. WORK CAPACITY: *(The Tenderer is requested to furnish the following particulars, attach additional pages if more space is required. Failure to furnish the particulars may result in the Tender being disregarded.)*

Skilled technicians employed		**Unskilled employees employed**	
Categories of technicians	**Number**	**Categories of employees**	**Number**

1.1. Provide full particulars of:

Machinery	**Equipment**	**Workshops**

2. PARTICULARS OF COMMITMENTS WHICH THE TENDERER HAS PREVIOUSLY COMPLETED AND PRESENTLY ENGAGED WITH:

2.1. Current projects:

	Project	Place (town)	Reference / Contact person	Contact Tel. No.	Contract amount	Contract period	Date of commencement	Scheduled date of completion
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								

2.2. Previous projects:

	Project	Place (town)	Reference / Contact person	Contact Tel. No.	Contract amount	Contract period	Date of commencement	Scheduled date of completion	Actual date of completion
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									

Name of Tenderer	**Signature**	**Date**

T2.1.06: PREFERENCE POINT SYSTEM

SBD 6.1

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

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

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

1. GENERAL CONDITIONS

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

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

1.2 To be completed by the organ of state

a) The applicable preference point system for this tender is the 80/20 preference point system.

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

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

(a) Price; and

(b) Specific Goals.

1.4 To be completed by the organ of state:

The maximum points for this tender are allocated as follows:

	POINTS
PRICE	80
SPECIFIC GOALS	20
Total points for Price and SPECIFIC GOALS	**100**

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

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

2. DEFINITIONS

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

(b) **"price"** means an amount of money tendered for goods or services, and includes all applicable taxes less all unconditional discounts;

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

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

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

3. FORMULAE FOR PROCUREMENT OF GOODS AND SERVICES

3.1. POINTS AWARDED FOR PRICE

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

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

80/20 **or** **90/10**

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

Where

Ps = Points scored for price of tender under consideration

Pt = Price of tender under consideration

Pmin = Price of lowest acceptable tender

4. POINTS AWARDED FOR SPECIFIC GOALS

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

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

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

(b) any other invitation for tender, that either the 80/20 or 90/10 preference point system will apply and that the lowest acceptable tender will be used to determine the applicable preference point system, then the organ of state must indicate the points allocated for specific goals for both the 90/10 and 80/20 preference point system.

Table 1: Specific goals for the tender and points claimed are indicated per the table below.

(Note to organs of state: Where either the 90/10 or 80/20 preference point system is applicable, corresponding points must also be indicated as such.

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

The specific goals allocated points in terms of this tender	Number of points allocated (90/10 system) (To be completed by the organ of state)	Number of points allocated (80/20 system) (To be completed by the organ of state)	Number of points claimed (90/10 system) (To be completed by the tenderer)	Number of points claimed (80/20 system) (To be completed by the tenderer)
Categories of persons historically disadvantaged by unfair discrimination on the basis of race. Information will be verified on the CSD report. Points will be allocated based on the percentage of ownership per goal Black Ownership = 10 Points		(10)		
Categories of persons historically disadvantaged by unfair discrimination on the basis of gender. Information will be verified on the CSD report. Points will be allocated based on the percentage of ownership per goal Female Ownership = 10 Points		(10)		
Total		20		

DECLARATION WITH REGARD TO COMPANY/FIRM

4.3. Name of company/firm……

4.4. Company registration number: ……...

4.5. TYPE OF COMPANY/ FIRM

- ☐ Partnership/Joint Venture / Consortium
- ☐ One-person business/sole propriety
- ☐ Close corporation
- ☐ Public Company
- ☐ Personal Liability Company
- ☐ (Pty) Limited
- ☐ Non-Profit Company

☐ State Owned Company
[TICK APPLICABLE BOX]

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

i) The information furnished is true and correct;

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

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

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

(a) disqualify the person from the tendering process;

(b) recover costs, losses or damages it has incurred or suffered as a result of that person's conduct;

(c) cancel the contract and claim any damages which it has suffered as a result of having to make less favourable arrangements due to such cancellation;

(d) recommend that the tenderer or contractor, its shareholders and directors, or only the shareholders and directors who acted on a fraudulent basis, be restricted from obtaining business from any organ of state for a period not exceeding 10 years, after the *audi alteram partem* (hear the other side) rule has been applied; and

(e) forward the matter for criminal prosecution, if deemed necessary.

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

SURNAME AND NAME: .....
DATE: .....

ADDRESS: .....

.....

.....
.....

T2.1.07: RESOURCES TO BE EMPLOYED IN TERMS OF ORGANIZATION AND STAFFING

The Tenderer shall list below the key personnel (including first nominee and the second choice alternate), whom he proposes to employ on the Contract should his tender be accepted, both at his headquarters and on the Site, to direct and for the execution of the work, together with their qualifications, experience, positions held and their nationalities.

DESIGNATION	NAME AND NATIONALITY OF: (i) NOMINEE (ii) ALTERNATE	SUMMARY OF QUALIFICATIONS, EXPERIENCE AND PRESENT OCCUPATION
HEADQUARTERS Partner/Director Project manager Other key staff (give designation)		

DESIGNATION	NAME AND NATIONALITY OF: (i) NOMINEE (ii) ALTERNATE	SUMMARY OF QUALIFICATIONS, EXPERIENCE AND PRESENT OCCUPATION
SITE OFFICE Site Agent Site Engineer/Technician Construction supervisor (give designation) Other key staff (give designation)		

T2.1.08: ESTIMATED MONTHLY EXPENDITURE

The Tenderer shall state below the estimated value of work to be completed every month, based on his preliminary programme and his tendered unit rates.

The amounts for contingencies and Contract Price Adjustment must not be included ***OR** the amount for contingencies must not be included.

MONTH	VALUE
1 2 3 4	R ..... R ..... R ..... R ..... COMPLETION OF CONTRACT
TOTAL	R .....

T2.2.09: Compulsory Site Inspection Meeting Certificate

PROJECT TITLE:	**REQUEST FOR BIDS FOR THE APPOINTMENT OF A CONTRACTOR FOR THE REPAIRS TO THE EXISTING TIMBER ROOF TRUSSES AND WET SERVICES AT THE KIRSTENBOSCH CENTRE FOR BIODIVERSITY CONSERVATION BUILDING INCLUDING ASSOCIATED CIVIL AND BUILDING WORKS AT THE HARRY MOLTENO LIBRARY AT THE KIRSTENBOSCH NATIONAL BOTANICAL GARDEN: COMPLETION CONTRACT**
BID No.:	**SANBI G567/2025**

This is to certify that I, _____representing

_____in the company of

_____ visited the site on: _____

I have made myself familiar with all local conditions likely to influence the work and the cost thereof. I further certify that I am satisfied with the description of the work and explanations given at the site inspection meeting and that I understand perfectly the work to be done, as specified and implied, in the execution of this contract.

Name of Tenderer	Signature	Date

Name of Principal Agent	Signature	Date

T2.1.10: Bidders Disclosure

PROJECT TITLE:	**REQUEST FOR BIDS FOR THE APPOINTMENT OF A CONTRACTOR FOR THE REPAIRS TO THE EXISTING TIMBER ROOF TRUSSES AND WET SERVICES AT THE KIRSTENBOSCH CENTRE FOR BIODIVERSITY CONSERVATION BUILDING INCLUDING ASSOCIATED CIVIL AND BUILDING WORKS AT THE HARRY MOLTENO LIBRARY AT THE KIRSTENBOSCH NATIONAL BOTANICAL GARDEN: COMPLETION CONTRACT**
CONTRACT NO:	**SANBI G567/2025**

1. PURPOSE OF THE FORM

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

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

2. Bidder's declaration

2.1 Is the bidder, or any of its directors / trustees / shareholders / members / partners or any person having a controlling interest[1] in the enterprise,
employed by the state? **YES/NO**

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

Full Name	Identity Number	Name of State institution

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

2.2.1 If so, furnish particulars:
……
……

2.3 Does the bidder or any of its directors / trustees / shareholders / members / partners or any person having a controlling interest in the enterprise have any interest in any other related enterprise whether or not they are bidding for this contract? **YES/NO**

2.3.1 If so, furnish particulars:
……
……

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

3 DECLARATION

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

3.1 I have read and I understand the contents of this disclosure;

3.2 I understand that the accompanying bid will be disqualified if this disclosure is found not to be true and complete in every respect;

3.3 The bidder has arrived at the accompanying bid independently from, and without consultation, communication, agreement or arrangement with any competitor. However, communication between partners in a joint venture or consortium[2] will not be construed as collusive bidding.

3.4 In addition, there have been no consultations, communications, agreements or arrangements with any competitor regarding the quality, quantity, specifications, prices, including methods, factors or formulas used to calculate prices, market allocation, the intention or decision to submit or not to submit the bid, bidding with the intention not to win the bid and conditions or delivery particulars of the products or services to which this bid invitation relates.

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

3.5 There have been no consultations, communications, agreements or arrangements made by the bidder with any official of the procuring institution in relation to this procurement process prior to and during the bidding process except to provide clarification on the bid submitted where so required by the institution; and the bidder was not involved in the drafting of the specifications or terms of reference for this bid.

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

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

……	..……
Signature	Date
……	……
Position	Name of bidder

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

T2.1.11: MEDICAL CERTIFICATE FOR THE CONFIRMATION OF PERMANENT DISABLED STATUS

PROJECT TITLE:	**REQUEST FOR BIDS FOR THE APPOINTMENT OF A CONTRACTOR FOR THE REPAIRS TO THE EXISTING TIMBER ROOF TRUSSES AND WET SERVICES AT THE KIRSTENBOSCH CENTRE FOR BIODIVERSITY CONSERVATION BUILDING INCLUDING ASSOCIATED CIVIL AND BUILDING WORKS AT THE HARRY MOLTENO LIBRARY AT THE KIRSTENBOSCH NATIONAL BOTANICAL GARDEN: COMPLETION CONTRACT**
CONTRACT NO:	**SANBI G567/2025**

I, ... (*surname and name*), Identity number,

.....do hereby declare that I am a registered medical practitioner, with my

practice number being....., practicing at .....

.....(Physical and postal addresses) declare that I have examined Mr/Mrs

....., identity number of .....

and have found the said person to be permanently disabled

or having a recurring disability.

“Disability” means, in respect of a person, a permanent impairment of a physical, intellectual, or sensory function, which results in restricted, or lack of, ability to perform an activity in the manner, or within the range, considered normal for a human being.” – As per Preferential Procurement Policy Framework Act: No 5 of 2000 (PPPFA)

The nature of the disability is as follows:

.....

.....

.....

Thus signed at .....on this .....day of..... of.....

OFFICIAL STAMP OF
MEDICAL PRACTITIONER

.....

Signature

.....

Date

T2.1.12: PROOF OF REGISTRATION WITH CONSTRUCTION INDUSTRY DEVELOPMENT BOARD

PROJECT TITLE:	**REQUEST FOR BIDS FOR THE APPOINTMENT OF A CONTRACTOR FOR THE REPAIRS TO THE EXISTING TIMBER ROOF TRUSSES AND WET SERVICES AT THE KIRSTENBOSCH CENTRE FOR BIODIVERSITY CONSERVATION BUILDING INCLUDING ASSOCIATED CIVIL AND BUILDING WORKS AT THE HARRY MOLTENO LIBRARY AT THE KIRSTENBOSCH NATIONAL BOTANICAL GARDEN: COMPLETION CONTRACT**
CONTRACT NO:	**SANBI G567/2025**

The Tenderer shall provide a printed copy of the Active Contractor's Listing off the CIDB website. (www.cidb.org.za). In the case of a joint venture, a printed copy of the Active Contractor's listing must be provided for each member of the joint venture.

Name of Contractor: .....

Contractor Grading Designation: .....

CIDB Contractor Registration Number: .....

T2.1.14: COPY OF CSD REGISTRATION REPORT

PROJECT TITLE:	**REQUEST FOR BIDS FOR THE APPOINTMENT OF A CONTRACTOR FOR THE REPAIRS TO THE EXISTING TIMBER ROOF TRUSSES AND WET SERVICES AT THE KIRSTENBOSCH CENTRE FOR BIODIVERSITY CONSERVATION BUILDING INCLUDING ASSOCIATED CIVIL AND BUILDING WORKS AT THE HARRY MOLTENO LIBRARY AT THE KIRSTENBOSCH NATIONAL BOTANICAL GARDEN: COMPLETION CONTRACT**
CONTRACT NO:	**SANBI G567/2025**

A copy of Central Suppliers Database (CSD) Registration Report must be included for evaluation purposes.

T2.1.15: FINANCIAL REFERENCES

PROJECT TITLE:	**REQUEST FOR BIDS FOR THE APPOINTMENT OF A CONTRACTOR FOR THE REPAIRS TO THE EXISTING TIMBER ROOF TRUSSES AND WET SERVICES AT THE KIRSTENBOSCH CENTRE FOR BIODIVERSITY CONSERVATION BUILDING INCLUDING ASSOCIATED CIVIL AND BUILDING WORKS AT THE HARRY MOLTENO LIBRARY AT THE KIRSTENBOSCH NATIONAL BOTANICAL GARDEN: COMPLETION CONTRACT**
CONTRACT NO:	**SANBI G567/2025**

Notes to tenderer:

1. The tenderer shall attach to this form a letter from the bank in which it is declared how he conducts his account. The contents of the bank's letter must state the credit rating that the bank, in addition to the information required below, accords to the tenderer for the business envisaged by this tender. Failure to provide the required letter with the tender submission may render the tenderer's offer unresponsive in terms of tender condition C3.8.

2. The tenderer's banking details as they appear below shall be completed.

3. In the event that the tenderer is a joint venture enterprise, details of all the members of the joint venture shall be similarly provided and attached to this form.

Details of Company's Bank

DESCRIPTION OF BANK DETAIL	BANK DETAILS APPLICABLE TO TENDERER'S HEAD OFFICE
Name of bank	
Branch name	
Branch code	
Street address	
Postal address	
Name of manager	
Telephone number	
Fax number	
Account number	

T2.1.16: RECORD OF ADDENDA TO TENDER DOCUMENTS

PROJECT TITLE:	**REQUEST FOR BIDS FOR THE APPOINTMENT OF A CONTRACTOR FOR THE REPAIRS TO THE EXISTING TIMBER ROOF TRUSSES AND WET SERVICES AT THE KIRSTENBOSCH CENTRE FOR BIODIVERSITY CONSERVATION BUILDING INCLUDING ASSOCIATED CIVIL AND BUILDING WORKS AT THE HARRY MOLTENO LIBRARY AT THE KIRSTENBOSCH NATIONAL BOTANICAL GARDEN: COMPLETION CONTRACT**
CONTRACT NO:	**SANBI G567/2025**

I / We confirm that the following communications received from the South African National Biodiversity Institute before the submission of this tender offer, amending the tender documents, have been taken into account in this tender offer: *(Attach additional pages if more space is required)*

	Date	Title or Details
1.		
2.		
3.		
4.		
5.		
6.		
7.		
8.		
9.		

Name of Tenderer	Signature	Date

I / We confirm that no communications were received from the South African National Biodiversity Institute before the submission of this tender offer, amending the tender documents.

Name of Tenderer	Signature	Date

T2.1.17: COMPULSORY ENTERPRISE QUESTIONNAIRE

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

Section 1: Name of enterprise: .....

Section 2: VAT registration number, if any: .....

Section 3: PSIRA registration number, if any: .....

Section 4: Particulars of sole proprietors and partners in partnerships

Name*	Identity number*	Personal income tax number*

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

Section 5: Particulars of companies and close corporations

Company registration number: .....

Close corporation number: .....

Tax reference number: .....

Section 6: Record in the service of the state

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

- □ a member of any municipal council
- □ a member of any provincial legislature
- □ a member of the National Assembly or the National Council of Province
- □ a member of the board of directors of any municipal entity
- □ an official of any municipality or municipal entity
- □ an employee of any provincial department, national or provincial public entity or constitutional institution within the meaning of the Public Finance Management Act, 1999 (Act No 1 of 1999)
- □ a member of an accounting authority of any national or provincial public entity
- □ an employee of Parliament or a provincial legislature

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

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

*Insert separate page if necessary.

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

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

- □ a member of any municipal council
- □ a member of any provincial legislature
- □ a member of the National Assembly or the National Council of Province
- □ a member of the board of directors of any municipal entity
- □ an official of any municipality or municipal entity
- □ an employee of any provincial department, national or provincial public entity or constitutional institution within the meaning of the Public Finance Management Act, 1999 (Act No 1 of 1999)
- □ a member of an accounting authority of any national or provincial public entity
- □ an employee of Parliament or a provincial legislature

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

*Insert separate page if necessary.

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

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

(ii) confirms that neither the name of the enterprise or the name of any partner, manager, director or other person, who wholly or partly 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, 2004;

(iii) confirms that no partner, member, director or other person, who wholly or partly exercises, or may exercise, control over the enterprise, 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

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

Signed: ..... Date: .....

Name: ..... Position: .....

Enterprise name: .....

T2.1.18: COMPENSATION OF OCCUPATIONAL INJURIES AND DISEASE ACT (COIDA)

PROJECT TITLE:	**REQUEST FOR BIDS FOR THE APPOINTMENT OF A CONTRACTOR FOR THE REPAIRS TO THE EXISTING TIMBER ROOF TRUSSES AND WET SERVICES AT THE KIRSTENBOSCH CENTRE FOR BIODIVERSITY CONSERVATION BUILDING INCLUDING ASSOCIATED CIVIL AND BUILDING WORKS AT THE HARRY MOLTENO LIBRARY AT THE KIRSTENBOSCH NATIONAL BOTANICAL GARDEN: COMPLETION CONTRACT**
CONTRACT NO:	**SANBI G567/2025**

Letter of Good Standing from the office of the Compensation Commissioner as required by the Compensation for Occupational Injuries and Diseases Act (COIDA) must be included for evaluation purposes. The letter should be issued by the Department of Labour.

T2.1.22: PROOF OF LIABILITY INSURANCE

PROJECT TITLE:	**REQUEST FOR BIDS FOR THE APPOINTMENT OF A CONTRACTOR FOR THE REPAIRS TO THE EXISTING TIMBER ROOF TRUSSES AND WET SERVICES AT THE KIRSTENBOSCH CENTRE FOR BIODIVERSITY CONSERVATION BUILDING INCLUDING ASSOCIATED CIVIL AND BUILDING WORKS AT THE HARRY MOLTENO LIBRARY AT THE KIRSTENBOSCH NATIONAL BOTANICAL GARDEN: COMPLETION CONTRACT**
CONTRACT NO:	**SANBI G567/2025**

The tender shall append their Proof of Liability Insurance behind this page.

PART C: THE CONTRACT
Part C1: Agreement and Contract Data

PROJECT TITLE:	**REQUEST FOR BIDS FOR THE APPOINTMENT OF A CONTRACTOR FOR THE REPAIRS TO THE EXISTING TIMBER ROOF TRUSSES AND WET SERVICES AT THE KIRSTENBOSCH CENTRE FOR BIODIVERSITY CONSERVATION BUILDING INCLUDING ASSOCIATED CIVIL AND BUILDING WORKS AT THE HARRY MOLTENO LIBRARY AT THE KIRSTENBOSCH NATIONAL BOTANICAL GARDEN: COMPLETION CONTRACT**
CONTRACT NO:	**SANBI G567/2025**

C1.1 Form of Offer and Acceptance

The Employer, identified in the Acceptance signature block, has solicited offers to enter into a contract for:

REQUEST FOR BIDS FOR THE APPOINTMENT OF A CONTRACTOR FOR THE REPAIRS TO THE EXISTING TIMBER ROOF TRUSSES AND WET SERVICES AT THE KIRSTENBOSCH CENTRE FOR BIODIVERSITY CONSERVATION BUILDING INCLUDING ASSOCIATED CIVIL AND BUILDING WORKS AT THE HARRY MOLTENO LIBRARY AT THE KIRSTENBOSCH NATIONAL BOTANICAL GARDEN: COMPLETION CONTRACT

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.

The tenderer, identified in the Offer signature block, has examined the draft contract as listed in the Acceptance section and agreed to provide this Offer.

By the representative of the tenderer, deemed to be duly authorised, signing this part of this Form of Offer and Acceptance the tenderer offers to perform all of the obligations and liabilities of the **Contractor** under the contract including compliance with all its terms and conditions according to their true intent and meaning for an amount to be determined in accordance with the conditions of contract identified in the Contract Data.

THE OFFERED TOTAL OF THE PRICES INCLUSIVE OF VAT IS:

(in words) ..... Rand;

R ..... (in figures)

THE OFFERED PRICES ARE AS STATED IN THE PRICING SCHEDULE

This Offer may be accepted by the Employer by signing the Acceptance part of this Form of Offer and Acceptance and returning one copy of this document including the Schedule of Deviations (if any) to the tenderer before the end of the period of validity stated in the Tender Data, or other period as agreed, whereupon the tenderer becomes the party named as the **Contractor** in the conditions of contract identified in the Contract Data.

Signature(s) .....

Name(s) .....

Capacity .....

For the Tenderer: .....

.....

(Insert name and address of organisation)

Name & signature of witness ..... Date .....

.....

[Failure of a Tenderer to complete and sign this form will invalidate the tender]

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 the amount due in accordance with the conditions of contract identified in the Contract Data. Acceptance of the tenderer's Offer shall form an agreement between the Employer and the tenderer upon the terms and conditions contained in this agreement and in the contract that is the subject of this agreement.

The terms of the Contract are contained in

Part C1	Agreements and Contract Data *[which includes this Agreement]*
Part C2	Pricing Data
Part C3	Scope of Work
Part C4	Site Information

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

Deviations from and amendments to the documents listed in the Tender Data and any Addenda thereto listed in the Tender Schedules, as well as any changes to the terms of the Offer agreed by the Tenderer and the Employer during this process of offer and acceptance, are contained in the Schedule of Deviations attached to and forming part of this Agreement. No amendments to or deviations from the said documents are valid unless contained in this Schedule, which must be duly signed by the authorised representative(s) of both parties.

The Tenderer shall within the time required to submit documentation in accordance with clause 5.3.2 of the Contract Data (C1.2) after receiving a completed copy of this Agreement, including the Schedule of Deviations (if any), contact the Employer's agent (whose details are given in the Contract Data) to arrange the delivery of any bonds, guarantees, proof of insurance and any other documentation to be provided in terms of the Conditions of Contract identified in the Contract Data at, or just after, the date this Agreement comes into effect. Failure to fulfil any of these obligations in accordance with those terms shall constitute a repudiation of this Agreement.

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

Signature(s) .....

Name(s) .....

Capacity .....

For the Employer: .....

.....

.....
(Insert name and address of organisation)

Name & signature of witness ..... Date .....

.....

Schedule of Deviations

1 Subject .....
Details .....
.....
.....
.....

2 Subject .....
Details .....
.....
.....
.....

3 Subject .....
Details .....
.....
.....
.....

4 Subject .....
Details .....
.....
.....
.....

5 Subject .....
Details .....
.....
.....
.....

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

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

FOR THE TENDERER:

Signature(s) ....

Name(s) ....

Capacity ....

.....
[Name and address of organisation]

Name and signature of witness ..... Date .....

FOR THE EMPLOYER:

Signature(s) ....

Name(s) ....

Capacity ....

.....
[Name and address of organisation]

Name and signature of witness ..... Date .....

CONFIRMATION OF RECEIPT

The Tenderer (now Contractor), identified in the Offer part of this Agreement, hereby confirms receipt from the Employer, identified in the Acceptance part of this Agreement, of one fully completed original copy of this Agreement, including the Schedule of Deviations (if any) today:

The..... *[day]*

of ..... *[month]*

20.....*[year]*

at ..... *[place]*

For the Contractor: .....
Signature

.....
Name

.....
Capacity

Signature and name of witness: .....
Signature

.....
Name

PART C: THE CONTRACT
Part C1: Agreement and Contract Data

PROJECT TITLE:	**REQUEST FOR BIDS FOR THE APPOINTMENT OF A CONTRACTOR FOR THE REPAIRS TO THE EXISTING TIMBER ROOF TRUSSES AND WET SERVICES AT THE KIRSTENBOSCH CENTRE FOR BIODIVERSITY CONSERVATION BUILDING INCLUDING ASSOCIATED CIVIL AND BUILDING WORKS AT THE HARRY MOLTENO LIBRARY AT THE KIRSTENBOSCH NATIONAL BOTANICAL GARDEN: COMPLETION CONTRACT**
CONTRACT NO:	**SANBI G567/2025**

C1.2 Contract Data

The Conditions of Contract are the **JBCC Series 2000 Principal Building Agreement (July 2007 Edition 5.0 - Reprint 1)** published by the Joint Building Contract Committee. Copies of these documents may be obtained from the **Association of South African Quantity Surveyors** (011-315 4140), the **Master Builders Association** (011-205 9000), the **South African Association of Consulting Engineers** (011-463 2022) or the **South African Institute of Architects** (011-486 0684).

The JBCC Principal Building Agreement Contract Data EC and the JBCC Principal Building Agreement Contract Data CE form an integral part of this agreement.

The **ASAQS Preliminaries (November 2007 Edition)** published by the Association of South African Quantity Surveyors for use with the said JBCC Principal Building Agreement shall be deemed to be incorporated in the bills of quantities.

The **Model Preambles for Trades (2008 Edition)** as published by the Association of South African Quantity Surveyors shall be deemed to be incorporated in the bills of quantities and no claims arising from brevity of description of items fully described in the said Model Preambles will be entertained.

Section C1.2.1: Contract Data: Employer to Contractor (EC)

Employer Addendum Code 2101-EC

For information purposes only. To be signed on appointment.

Introduction

This addendum contains all variables referred to in the **Principal Building Agreement** that are the responsibility of the Contractor to provide the appropriate information that is necessary for the Contractor to complete his tender. The Addendum must be completed in full and included in the tender documents. The Addendums "Contract Data – EC", "Contract Data – CE", "Contract Data – ES" and "Contract Data – SE" form part of the contract between the parties.

Definitions

The definitions used in this document and the interpretation thereof are as listed in the Principal Building Agreement. The work or phrase of a definition is in bold text and shall bear the meaning assigned to it in the Principal Building Agreement. Where such word or phrase is not highlighted it shall bear the meaning consistent with the context of its use. The listed defined word or phrase does not quality as a definition where information required to be stated in the contract data has not been provided.

Provision of Contract Data

Spaces requiring information must be filled in, shown as "not applicable" or deleted and not left blank. Where choices are offered, the non-applicable items are to be clearly struck out. Where insufficient space is provided the additional information should be annexed hereto and cross referenced to the applicable clause of the contract data.

Reference Clauses

Where relevant the Principal Building Agreement clause applicable to the required information is printed in italics under the Contract Data clause number i.e. [27.4.2]

TABLE OF CONTENTS

CONTRACT DATA – EMPLOYER

1.0 CONTRACTING AND OTHER PARTIES

1.1 *[1.2]*	**Employer:**	South African National Biodiversity Institute		
	Postal Address:	Private Bag X101, Silverton, Gauteng	**Code:**	0184
	Physical Address:	Pretoria National Botanical Garden 2 Cussonia Avenue, Brummeria, Gauteng	**Code:**	0184
	Tel no.:	012 843 5000	**Fax no.:**	012 843 5205
	VAT no.			
	E-mail:			
1.2 *[5.1]*	**Principal Agent:**	Virtual Consulting Engineers VCE (Pty) Ltd	**Person:**	Mr Rameez Ishmail
	Postal Address:	P.O. Box 82, Crawford	**Code:**	7779
	Tel no.:	021 685 0789	**Fax no.:**	086 655 2690
	E-mail:	rameez@virtualconsulting.co.za		
1.2 *[5.2]*	**Agent (1):**		**Person:**	
	Agent's Service:			
	Postal Address:		**Code:**	
	Tel no.:		**Fax no.:**	
	E-mail:			
1.3 *[5.2]*	**Agent (2):**		**Person:**	
	Agent's Service:			
	Postal Address:		**Code:**	
	Tel no.:		**Fax no.:**	
	E-mail:			
1.4 *[5.2]*	**Agent (3):**		**Person:**	
	Agent's Service:			
	Postal Address:		**Code:**	
	Tel no.:		**Fax no.:**	
	E-mail:			
1.5 *[5.2]*	**Agent (4):**		**Person:**	
	Agent's Service:			
	Postal Address:		**Code:**	

	Tel no.:		**Fax no.:**	
	E-mail:			
1.6 *[5.2]*	**Agent (5):**		**Person:**	
	Agent's Service:			
	Postal Address:		**Code:**	
	Tel no.:		**Fax no.:**	
	E-mail:			
1.7 *[5.2]*	**Agent (6):**		**Person:**	
	Agent's Service:			
	Postal Address:		**Code:**	
	Tel no.:		**Fax no.:**	
	E-mail:			
1.8 *[5.2]*	**Agent (7):**		**Person:**	
	Agent's Service:			
	Postal Address:		**Code:**	
	Tel no.:		**Fax no.:**	
	E-mail:			

1.9 *[5.5]* **Interest of principal agent or other agent in the project.** (Yes / No) **No**

Details where "yes": **N/A**

1.10 The **principal agent** named in 1.2 above is responsible for the preparation of the **contract data** schedule and must be contacted should the **contractor** be uncertain of the information provided or to be provided. Failure to complete the **contract data** schedule in full may result in the tender being disqualified.

2.0 CONTRACT AND SITE INFORMATION

2.1 *[1.7]* The **law** applicable to this **agreement**: (Country / State) **RSA**

2.2 *[1.1]* **Works** identification: **REQUEST FOR BIDS FOR THE APPOINTMENT OF A CONTRACTOR FOR THE REPAIRS TO THE EXISTING TIMBER ROOF TRUSSES AND WET SERVICES AT THE KIRSTENBOSCH CENTRE FOR BIODIVERSITY CONSERVATION BUILDING INCLUDING ASSOCIATED CIVIL AND BUILDING WORKS AT THE HARRY MOLTENO LIBRARY AT THE KIRSTENBOSCH NATIONAL BOTANICAL GARDEN: COMPLETION CONTRACT**

2.3 *[1.1]* Site description: **Kirstenbosch National Botanical Garden, Cape Town**

2.4 *[15.2.1]*	Possession of the **site** is to be given on:	(Date)	**Within 5 (five) working days after receipt of documentary evidence that:** • **Insurances have been effected *[12.2];*** • **Security has been provided to the Employer *[14.1];*** • **Contractor's Lien has been signed;** • **Safety Plan has been approved by the Employer.**
2.5 *[15.3]*	Period for the commencement of the **works** after the contractor takes possession of the **site:**	(Working days)	**5 (Five)**
2.6 *[15.4], [28.0]*	Completion of the works in **sections** is required.	(Yes / No) **No** (No. of sections)	**N/A**
2.7 *[3.3], [31.16.2]*	Waiver of the **contractor's** lien or right of continuing possession is required.	(Yes / No)	**No**
2.8 *[16.1]*	Defined restrictions to the **site** area. Where "yes" the specific requirements are described below or detailed in the **contract documents**.	(Yes / No)	**Yes**
2.9 *[16.4]*	Geotechnical investigation of the **site** has been undertaken. Where "yes" the results are included in the **contract documents.**	(Yes / No)	**N/A**
2.10 *[16.6]*	Existing premises will be occupied. Where "yes" the specific requirements are described below or detailed in the **contract documents.**	(Yes / No)	**No**
2.11 *[16.7]*	Provision of temporary services is required. Where "yes" the specific requirements are described below or detailed in the **contract documents.**	(Yes / No)	**Yes**
2.11.1	**Water**	Option A Contractor – his cost Option B Employer – free of charge Option C Contractor – metered (contractor cost)	(A, B or C) **B**
2.11.2	**Electricity**	Option A Contractor – his cost Option B Employer – free of charge Option C Contractor – metered (contractor cost)	(A, B or C) **B**
2.11.3	**Telecom**	Option A Contractor – his cost Option B Employer – free of charge Option C Contractor – metered (contractor cost)	(A, B or C) **A**
2.11.4	**Ablutions**	Option A Contractor – his cost Option B Employer – free of charge Option C Contractor – metered (contractor cost)	(A, B or C) **A**
2.12 *[16.8]*	Protection of existing trees and shrubs is required. Where "yes" the specific requirements are described below or detailed in the **contract documents.**	(Yes / No)	**No**

3.0 INSURANCE AND SECURITIES

3.1 *[10.1.1], [12.6]*	Contract works insurance to be effected by:	(Employer / Contractor)	**Contractor**
	For the sum of:	(Amount)	**Contract Sum Plus 20%**
	With a deductible of:	(Amount)	**R20 000**
3.2 *[10.1.2], [11.1-3], [12.6]*	Supplementary / Special insurance to be effected by:	(Employer / Contractor)	**N/A**
	For the sum of:	(Amount)	**N/A**
	With a deductible of:	(Amount)	**N/A**
3.3 *[10.1.3], [12.6]*	Public liability insurance to be effected by:	(Employer / Contractor)	**Contractor**
	For the sum of:	(Amount)	**R5 000 000 per claim**
	With a deductible of:	(Amount)	**R20 000**
3.4 *[11.1.1]*	Support insurance to be effected by:	(Employer / Contractor)	**N/A**
	For the sum of:	(Amount)	**N/A**
	With a deductible of:	(Amount)	**N/A**
3.5 *[11.1.2-3], [12.1]*	Special insurance to be effected by:	(Employer / Contractor)	**N/A**
	Type:	**N/A**	
	For the sum of:	(Amount)	**N/A**
	With a deductible of:	(Amount)	**N/A**

4.0 PRACTICAL COMPLETION DATES AND PENALTIES

		Date	Penalty Amount
4.1 *[24.3.1], [30.1-36]*	For the **works** as a whole: The date for **practical completion** and the **penalty** per **calendar day** is:	**4 months after date of site handover (Excl. Builders Holiday)**	**R2 400-00 per calendar day (Excl. VAT)**

Or

4.2 *[24.3.1], [28.1]* For the **works** in **sections**: The date for **practical completion** and the **penalty** per **calendar day** is:

	Date	Penalty Amount
Section 1	**N/A**	**R**
Section 2	**N/A**	**R**
Section 3	**N/A**	**R**
Section 4	**N/A**	**R**

5.0 DOCUMENTS AND GENERAL

5.1 *[3.7]*	Construction document copies to be supplied to the **contractor** free of charge.	(No. of copies)	**3**		
5.2 *[3.9]*	The **priced document** may be used as a specification of **materials and goods** and work methods.	(Yes / No)	**Yes**		
5.3 *[3.10]*	The **contractor** shall provide a schedule of rates.	(Yes / No)	**No**	(Addendum No.)	**Refer to Bill of Quantities**
5.4 *[3.11]*	Changes made to **JBCC** standard documents.	(Yes / No)	**Yes**	(Addendum No.)	**Refer to Point 6 below**
5.5 *[15.1.1]*	On acceptance of the tender the **priced document** is to be submitted within the stated **working days.**	(No. of days)	**Priced document to be submitted with Tender**		
5.6 *[22.2]*	Work to be undertaken by **direct contractors.**	(Yes / No)	**No**	(Addendum No.)	**N/A**

5.7 *[24.9]* On achievement of practical completion the **contractor** is to hand over all certificates and manuals etc. related to the works.

5.8 *[31.1]*	Interim **payment certificate** to be issued by:	(Date of Month)	**25th**

5.8 *[4.1]* The following items of works shall be designed by the Contractor:

(1)	Certificates of compliance	(2)	All guarantees
(3)		(4)	
(5)		(6)	

6.0 STATE PROVISIONS AND SUBSTITUTIONS

6.1 *Replace the following definitions with:*

"CONSTRUCTION PERIOD" means the period commencing on the date of acceptance of the bid as stated in [15.2.1] And ending on the date of **practical completion**

"**INTEREST"** means the interest rate as determined by the Minister of Finance, from time to time, in terms of section 80(1)(b) of the Public Finance Management Act, 1999 (Act No. 1 of 1999).

6.2 *[3.6]* *Replace the last sentence with the following:*

The original signed set of contract documents shall be held by the **Employer**.

6.3 *[5.1]* *Replace the clause with the following:*

In terms of the clauses listed hereunder the **Employer** has retained its authority and has not given a mandate to the **Principal Agent**. The **Employer** shall sign all documents in relation to the following clauses:

20.1, 20.7, 26.2.1, 26.3.1, 29.1, 29.2, 29.4.1, 29.4.3, 29.7, 29.8, 32.1, 32.6.2, 32.15, 34.3

Copies of the signed documents shall be provided to the **Principal Agent**.

6.4 *[8.4]* *Replace the clause with the following:*

The **Contractor** shall bear the full risk of damage to and/or destruction of the **works** by whatever cause during construction of the **works** and hereby indemnifies and holds harmless the **Employer** against any such damage. The **Contractor** shall take such precautions and security measures and other steps for the protection and security of the **works** as the **Contractor** may deem necessary.

6.6 *[9.3]* *Add the following clause:*

The **Employer's** rights to claim damages for the **Contractor's** omissions and actions will not be affected.

6.7 *[10.1]* *Replace the clause with the following:*

The **Contractor** shall effect contract works insurances and, where available, supplementary insurance in respect of civil commotion, riot and strike shall be effected for the **works** for the Contractor's all risk and, in addition, covering the **Contractor's** subcontractors. Such insured amounts shall include the full value of materials and goods supplied by the **Employer** to the Contractor. Supplementary insurance shall not be effected where the **Employer** makes such an election as stated in [11.1.2 – 3]

6.8 *Add the following clause:*
[11.2]

The **Contractor** shall effect public liability insurance for not less than the amount and the deductible as stated in [10.1.3]. In addition the **Contractor** shall affect any relevant workmen's compensation or similar insurances as are required by **law**. The **Contractor** shall ensure that his sub-contractors effect their own similar insurances.

6.9 *Add the following clause:*
[11.3]

Should the **Employer** decide that the execution of the works could cause the weakening or interference with the support of the land adjacent to the **site**, the **Employer** shall state in [11.1.1] That the **Contractor** shall effect support insurance

6.12 *Replace the clause with the following:*
[12.3]

Where the **Contractor** fails to effect any of the required insurances or to keep them in force, the **Employer** may cancel this agreement in terms of clause [36.0]

6.14 *Replace the clause with the following:*
[14.1]

Security:

The securities to be provided by the **Contractor** are:
(1) Variable construction guarantee
(2) Fixed construction guarantee
(3) Advance payment guarantee

6.14 *Replace the clause with the following:*
[15.2.1]

Give the **Contractor** possession of site within ten (10) **working days** of the commencement of the **construction period** provided that the **Contractor** has complied with the terms of [15.1.1] and [15.1.2]

6.15 *Replace the clause with the following:*
[25.3]

Should the **Principal Agent** not issue a **works completion** list, in terms of [25.1] or [25.2.2], within seven (7) **calendar days** from the end of the inspection period, the **Contractor** shall notify the **Employer** and **Principal Agent**. Should the **Principal Agent** not issue such **works completion** list within seven (7) **calendar days** of such notice, the **Employer** may within seven (7) **calendar days** issue to the **Contractor** a **works completion** list. Should the **Employer**:

6.16 *Replace the clause with the following:*
[25.3.1]

Not issue such **works completion** list within seven (7) **calendar days**, then the **certificate of works completion** shall be deemed to have been issued on the date of expiry of the initial notice period and **works completion** shall be deemed to have been achieved on such date.

6.17 *Replace the clause with the following:*
[25.3.2]

Issue a **works completion** list and the work on the **works completion** list not have been completed or where further **defects** have become apparent, the **Employer** shall forthwith identify such items on the updated **works completion** list and notify the **Contractor**. The **Contractor** shall repeat the procedure in terms of [25.2.2] until such items have been completed to the satisfaction of the **Employer**.

6.18 *Replace the clause with the following:*
[26.1]

The defects liability period for the works shall commence on the date of works completion and end after three hundred and sixty-five (365) **calendar days** for items stated in the **bills of quantities**.

6.19 *Replace the clause with the following:*
[26.4]

Should the **Principal Agent** not issue a **defects** list in terms of [26.2.2 or 26.3.2], within seven (7) **calendar days** from the end of the **defects** liability period, the **Contractor** shall notify the **Employer** and **Principal Agent**. Should the **Principal Agent** not issue such **defects** list within seven (7) **calendar days** of receipt of such notice, the **Employer** may within seven (7) **calendar days** issue to the **Contractor** a **defects** list. Should the **Employer**:

6.20 *Replace the clause with the following:*
[26.4.1]

Not issue such **defects** list within seven (7) **calendar days**, then the **certificate of final completion** shall be deemed to have been issued on the date of expiry of the initial notice period and **final completion** shall be deemed to have been achieved on such date.

6.21 *Replace the clause with the following:*
[26.4.2]

Issue a **defects** list and the work on the **defects** list has not been completed or where further **defects** have become apparent, the **Employer** shall forthwith identify such items on the updated **defects** list and notify the **Contractor**. The **Contractor** shall repeat the procedure in terms of [26.3.2] until such items have been completed to the satisfaction of the **Employer**

6.22 *Replace the clause with the following:*
[26.6]

A **certificate of final completion** issued in terms of [26.0] shall be *prima facie* evidence as to the sufficiency of the **works** and that the Contractor's obligations in terms of [2.0] and [15.0] have been fulfilled other than for **latent defects**.

6.23 *Replace the clause with the following:*
[27.1]

The **latent defects** liability period shall commence at the start of the **construction period** and end ten (10) years from the date of **final completion** where **final completion** in terms of [26.0] is achieved.

6.24 *Replace the clause with the following:*
[27.2]

Where cancellation of this **agreement** occurs before the achievement of **final completion** the **latent defects** liability period shall end ten (10) years from the date of cancellation.

6.27 *Replace the clause with the following:*
[31.4.2]

A reasonable estimate of the value of **materials and goods** in terms of [31.6] unless the **Employer** elects not to pay for such.

6.29 *Replace the clause with the following:*
[31.9]

The **Employer** shall pay the **Contractor** the amount certified within thirty (30) **calendar days** of the date for issue of the **payment certificate**. Payment shall be subject to the **Contractor** giving the **Employer** a **tax** invoice for the amount due.

6.30 *Replace the last sentence with the following:*
[31.11.2]

The principle agent shall calculate such default interest at the rate as determined by the Minister of Finance, from time to time, in terms of section 80(1)(b) of the Public Finance Management Act, 1999 (Act No. 1 of 1999).

6.31 *Replace the clause with the following:*
[31.12]

Where a **payment certificate** reflects an amount in favour of the **Employer**, the **Contractor** shall pay the amount certified within twenty-one (21) **calendar days** of the date of issue of the **payment certificate**. Where such an amount has not been paid, the **Contractor** shall be liable for default interest and the **Principal Agent** shall include such an amount in the **recovery statement** in terms of [33.0]. Payment shall be subject to the **Employer** giving the **Contractor** a **tax** invoice for the amount due. The **Principal Agent** shall calculate such interest at the rate as determined by the Minister of Finance, from time to time, in terms of section 80(1)(b) of the Public Finance Management Act, 1999 (Act No. 1 of 1999).

6.32 *Replace the clause with the following:*
[34.1]

The **Contractor** shall cooperate with and assist the **Principal Agent** in the preparation of the **final account** by timeously providing all relevant documents on request. The **Principal Agent** shall issue the final account to the **Contractor** within one hundred and twenty (120) **working days**.

6.33 *Add the following clause:*
[34.2]

The **Principal Agent** shall allow the **Employer** twenty (20) **working days**, within the period provided in [34.1] to accept the **final account** before presentation to the **Contractor** in terms of [34.3]

6.34 *Add the following:*
[34.5]

The final payment certificate shall be issued by the **Employer**.

6.35 *Replace the clause with the following:*
[34.9]

The **Employer** shall concurrently with the issue of the final **payment certificate** issue a statement to the **Contractor** showing the total amount of **tax** certified.

6.36 The **Employer** shall pay to the **Contractor** the amount certified for payment in the final **payment**
[34.10] **certificate** within thirty (30) **calendar days** of the date of issue of the final **payment certificate** subject to the **Contractor** giving the **Employer** a **tax** invoice for the amount due.

6.37 *Replace the last sentence with:*
[34.12]

Such interest shall be calculated at the rate as determined by the Minister of Finance, from time to time, in terms of section 80(1)(b) of the Public Finance Management Act, 1999 (Act No. 1 of 1999).

6.38 *Replace the clause with the following:*
[36.1]

The **Employer** may, without prejudice of any other rights available to him, cancel this **agreement** where the **Contractor:**

6.39 *Replace the clause with the following:*
[36.2]

Where the **Contractor** is in default, the **Employer** may notify the **Contractor**, either directly or through the **Principal Agent**, of his default and of the **Employer's** intention to cancel this **agreement** in terms of [36.1], should the default not be remedied.

6.40 *Replace the clause with the following:*
[37.2]

Where the **Employer** considers cancelling this **agreement** in terms of [37.1] the **Employer** shall notify the **Contractor** of the **Employer's** intention to cancel this **agreement**.

6.41 *Add the following clause:*
[39.2]

The **Employer** shall be entitled at any time to unilaterally terminate or cancel this **agreement** or any part thereof. Save for the following the **Contractor** shall not be entitled to claim any other amounts whatsoever in respect of such termination or cancellation of this **agreement**. The **Employer** shall be obliged to pay the **Contractor** as damages and/or loss of profit the lesser of:

6.42 *Add the following clause:*
[39.2.1]

An amount not exceeding ten per cent (10%) of the **contract sum.**

6.43 *Add the following clause:*
[39.2.2]

Ten per cent (10%) of the value of incomplete work.

6.43 *Add the following clause:*
[39.2.3]

The **Contractor's** actual damage or loss as determined by the **Employer** after receipt of evidence substantiating any such damage or loss.

6.44 *Replace the clause with the following:*
[40.2.2]

Litigation where the **Employer** so elects. Institution of the action shall be commenced and process served with one (1) year from the date of existence of the dispute, failing which the dispute shall lapse.

7.0 CHANGES MADE TO THE STANDARD JBCC DOCUMENT

Changes made to the standard JBCC document are listed in section 6 above.

8.0 DECLARATION BY THE PRINCIPAL AGENT

I, the Principal Agent named in 1.2 above, declare that the information provided above is complete and accurate at the time of calling for tenders. Where necessary, should any of the above information need to be varied, tenderers will be forthwith informed thereof in writing,

……
Principal Agent

……
Date

Section C1.2.2: Contract Data: Contractor to Employer (CE)

Contractor Addendum Code 2101-CE

Introduction

This addendum contains all variables referred to in the Principal Building Agreement that are the responsibility of the Contractor to provide the appropriate information that is necessary for the Contractor to complete his tender. The Addendum must be completed in full and included in the tender documents. The Addendums “Contract Data – EC”, “Contract Data – CE”, “Contract Data – ES” and “Contract Data – SE” form part of the contract between the parties.

Definitions

The definitions used in this document and the interpretation thereof are as listed in the Principal Building Agreement. The work or phrase of a definition is in **bold text** and shall bear the meaning assigned to it in the Principal Building Agreement. Where such word or phrase is not highlighted it shall bear the meaning consistent with the context of its use. The listed defined word or phrase does not quality as a definition where information required to be stated in the **contract data** has not been provided.

Provision of Contract Data

Spaces requiring information must be filled in, shown as “not applicable” or deleted and not left blank. Where choices are offered, the non-applicable items are to be clearly struck out. Where insufficient space is provided the additional information should be annexed hereto and cross referenced to the applicable clause of the **contract data**.

Reference Clauses

Where relevant the Principal Building Agreement clause applicable to the required information is printed in italics under the Contract Data clause number i.e. *[27.4.2]*

TABLE OF CONTENTS

CONTRACT DATA – CONTRACTOR

1.0 CONTRACTING PARTY

1.1 *[1.2]* **Contractor:** _____

Postal Address: _____ **Code:** _____

_____

Physical Address: _____ **Code:** _____

E-mail: _____

Tel no.: _____ **Fax no.:** _____

VAT no.: _____

2.0 SECURITIES

2.1 The security provisions selected are:

2.1.1 *[14.3]*	Variable Construction Guarantee	(Yes / No)	
2.1.2 *[14.4]*	Fixed Construction Guarantee and Payment Reduction	(Yes / No)	
2.1.3 *[14.5]*	Advanced Payment is required. Where "Yes"	Amount	**N/A**
2.1.4 *[14.5]*	An Advance Payment Guarantee to be provided	(Yes / No)	**No**

3.0 PAYMENT AND ADJUSTMENT OF PRELIMINARIES

3.1 **Payment of preliminaries**

The payment of preliminaries shall be according to the option selected by the **contractor**. The amount included in each monthly **payment certificate** in respect of preliminaries as stated in the **contract data** shall be:

3.1.1 **Option A**

Assessed by the **principal agent** as an amount prorated to the value of the work duly executed in the same ratio as the preliminaries bears to the **contract sum** excluding:

- The amount for preliminaries
- Any contingency sum
- Any amount in respect of **CPAP**

All inclusive of **tax.**

3.1.2 **Option B**

Calculated from the priced items in the **bills of quantities / lump sum document**. The **contractor** and the **principal agent** shall agree on a division of the priced preliminaries items into:

- An initial or establishment charge
- A monthly charge
- A final or disestablishment charge

All inclusive of **tax.**

In arriving at such a division cognizance shall be taken of such factors as:

- Premiums for annually renewable insurance policies.
- Plant, scaffolding and the like remaining the property of the **contractor** or the hiring company and the capital costs thereof not treated as part of the initial charge.

Where the initial **construction period** is extended the monthly charge shall be recalculated on the same basis as was originally applied but taking into account the revised **construction period** and the amounts already paid to the **contractor.**

Should the **contractor** and the **principal agent** be unable to agree such division then the **principal agent** shall make a division of the amount of preliminaries to be incorporated in the valuations of each monthly **payment certificate.**

3.2 **Adjustment of preliminaries**

The amount of items of preliminaries shall be adjusted to take account of the theoretical financial effect which changes in time and/or value have on preliminaries. Such ad adjustment shall be based on the particulars provided by the **contractor** for this purpose in terms of Option A or B and shall preclude any further adjustment of preliminaries.

Adjustment of preliminaries in terms of Options A or B shall apply notwithstanding the actual employment of resources by the **contractor** in the execution of the **works**. The adjustment of preliminaries shall be based on the options as selected in the **contractor's tender.**

For the adjustment of the preliminaries both the **contract sum** and the **contract value** shall exclude:

- The amount of preliminaries
- Any contingency sum
- Any amount in respect of **CPAP**

All inclusive of **tax.**

3.2.1 **Option A**

The amount of preliminaries shall be adjusted in the following categories:

- An amount which shall not be varied.
- An amount which shall be varied in proportion to the **contract value** as compared with the **contract sum.**

- An amount which shall be varied in proportion to the **construction period** as compared to the initial **construction period** excluding revisions to the **construction period** for which the **contractor** is not entitled to adjustment of the **contract value** in terms of the **agreement.**

The **contractor** shall, within fifteen (15) working days of taking possession of the **site**, give the **principal agent** a breakdown, subdivided into the above categories, of the amount for preliminaries in tabulated form, all to the satisfaction of the **principal agent.**

Should the **contractor** fail to provide such information within the period stipulated then the amount for preliminaries shall be deemed to be subdivided into the following proportions:

- 10% (ten percent) which amount shall not be varied.
- 15% (fifteen percent) which amount shall be varied in proportion to the **contract value** as compared with the **contract sum.**
- 75% (seventy-five percent) which amount shall be varied in proportion to the **construction period** as compared with the initial **construction period.**

For a lump sum document, should the contractor fail to identify the amount for preliminaries, then such an amount shall be deemed to be 7,5% (seven and a half percent) of the contract sum excluding:

- Any contingency sum
- Any amount in respect of **CPAP**

All inclusive of **tax.**

Where sectional completion is required in terms of the agreement, the contractor shall provide the **principal agent** with the division of the above categorised amounts into sections. Should the **contractor** fail to provide such information within the period stipulated the categorised amounts shall be prorated to the value of each section.

3.2.2 **Option B**

The **contractor** shall, within fifteen (15) **working days** of taking possession of the site, provide the **principal agent** with a detailed breakdown of the amount for preliminaries. This breakdown shall set out, among others, full particulars of administrative, supervisory and other personnel, plant, transport and other resources and charges included in the amount for preliminaries. The **contractor** shall show the periods to which the individual items related with the charge rate for such items by means of a **programme** all to the satisfaction of the **principal agent.**

Where sectional completion is required in terms of the **agreement,** the **contractor** shall provide the **principal agent** with details of the resources required for each section and those that are common to sections. Should the **contractor** fail to provide such information within the period stipulated, Option A shall apply.

3.2.3 **Payment certificate cash flow**

The **contractor** shall provide all reasonable assistance to the **principal agent** in the preparation of cash flow projections of claims for **payment certificates** where required by the **employer**. The projections shall be based on the **programme** and shall be updated as and when the **programme** requires updating. The cooperation of the **contractor** in terms of this item shall not prejudice his right to receive payment in terms of the **agreement.**

3.2.4	The **contract value** shall be adjusted according **CPAP** [3.1]	(Yes / No)	**No**
3.2.5	Payment of preliminaries [3.1.1-2]	(A or B)	

3.2.6	Adjustment of preliminaries [3.2.1-2]	(A or B)	

4.0 EMPLOYER CHANGES TO JBCC STANDARD DOCUMENTS

4.1	Changes (if any) in terms of the Employer's Contract Data are accepted [3.11]. Where "no" an addendum referenced to this clause is to be attached.	(Yes / No)	**Yes. Refer to EC 6**

5.0 THE TENDER

5.1 This tender is to be submitted to the principal agent at the street address provided in the invitation to tender before the tender closing date and time stated herein.

5.2 By the submission of this tender to the **employer** the tenderer offers and agrees to contract for, execute and complete the **works** for the tender sum as stated below.

5.3 Tenders will be opened in public directly after the stated closing time. Only the total tender sum as stated in each tender will be announced.

5.4 The lowest or any tender will not necessarily be accepted.

5.5 This tender shall remain in full legal force for **one hundred and twenty (120) calendar days**. The tenderer accepts liability for damages as may be suffered by the **employer** should the tender validity period not be honoured.

5.6 This tender takes into account all listed items [4.0] for the purpose of preparing and submitting this tender.

5.7 The successful tenderer will be appointed in terms of the JBCC Principal Building Agreement.

5.8	**TENDER SUM COMPILATION**	**Amount**
5.8.1	Tenderer's work including **prime cost amounts**	R
5.8.2	**Employer allowances** stated by the **principal agent**	R
5.8.3	**SUB TOTAL**	R
5.8.4	*Add* **tax** on 5.8.3	R
5.8.5	**TOTAL TENDER SUM inclusive of tax**	R

5.8.6	Tender Sum in words	

Thus done and signed at ..... on .....

.....	.....
Name of Signatory	Capacity of Authorised Signatory
.....	.....
As witness	for and on behalf of the Tenderer who warrants authorisation hereto

PART C: THE CONTRACT
Part C1: Agreement and Contract Data

PROJECT TITLE:	**REQUEST FOR BIDS FOR THE APPOINTMENT OF A CONTRACTOR FOR THE REPAIRS TO THE EXISTING TIMBER ROOF TRUSSES AND WET SERVICES AT THE KIRSTENBOSCH CENTRE FOR BIODIVERSITY CONSERVATION BUILDING INCLUDING ASSOCIATED CIVIL AND BUILDING WORKS AT THE HARRY MOLTENO LIBRARY AT THE KIRSTENBOSCH NATIONAL BOTANICAL GARDEN: COMPLETION CONTRACT**
CONTRACT NO:	**SANBI G567/2025**

C1.3 Form of Construction Guarantee (Pro Forma)

C1.3.1 FIXED CONSTRUCTION GUARANTEE - JBCC 2000 PRINCIPAL BUILDING AGREEMENT (Edition 5.0 of July 2007)

To:
South African National Biodiversity Institute
Private Bag X101
Silveron
0184

Sir,

FIXED CONSTRUCTION GUARANTEE FOR THE EXECUTION OF A CONTRACT IN TERMS OF JBCC 2000 (5.0 EDITION JULY 2007)

1. With reference to the contract between ..... (hereinafter Referred to as the "Contractor") and the South African National Biodiversity Institute (hereinafter referred to as the "Employer"), Contract/Tender No: **SANBI G567/2025 Request For Bids for the Appointment of a Contractor for the Repairs to the Existing Timber Roof Trusses and Wet Services at the Kirstenbosch Centre for Biodiversity Conservation Building Including Associated Civil and Building Works at the Harry Molteno Library at the Kirstenbosch National Botanical Garden: Completion Contract** (hereinafter referred to as the "contract") in the amount of

   R ……..(insert amount), … .....

   .....(insert amount in words), (hereinafter referred to as the contract sum),

   I / We, ...

   in my/our Capacity as ..... and hereby

   representing .....

   (hereinafter referred to as the "**Guarantor**") advise that the **Guarantor** holds at the **Employer's** disposal the sum of R....., (insert amount in figures)

   .....(insert amount in words) being 5% of the contract sum (excluding VAT), for the due fulfillment of the contract.

2. The **Guarantor** hereby renounces the benefits of the exceptions *non numeratae punia; non causa debiti; excussionis et divisionis;* and *de duobus vel pluribus reis debendi* which could be pleaded against the enforcement of this guarantee, with the meaning and effect whereof I/we declare myself/ourselves to be conversant, and undertake to the **Employer** the amount guaranteed, on receipt of a written demand from

the **Employer** to do so, stating that the **Employer** has a right of recovery against the **Contractor** in terms of 33.0 of the contract.

3. Subject to the above, but without in any way detracting from the **Employer's** rights to adopt any of the procedures provided for in the contract, the said demand can be made by the **Employer**, at any stage prior to the expiry of this guarantee.
4. The amount id by the **Guarantor** in terms of this guarantee may be retained by the **Employer** on condition that upon the issue of the last final **payment certificate**, the **Employer** shall account to the **Guarantor** showing how this amount has been expended and refund any balance due to the **Guarantor**.
5. The **Employer** shall have the absolute right to arrange his affairs with the **Contractor** in any manner which the **Employer** deems fit and the **Guarantor** shall not have the right to claim his release on account of any conduct alleged to be prejudicial to the **Guarantor**. Without derogating from the aforegoing, any compromise, extension of the **construction period**, indulgence, release or variation of the **Contractor's** obligation shall not affect the validity of this guarantee.
6. The **Guarantor** reserves the right to withdraw from this guarantee at any time by depositing the guaranteed amount with the **Employer**, whereupon the Guarantor's liability seizes.

7. This guarantee is neither negotiable nor transferable, and

   (a) must be surrendered to the **Guarantor** at the time when the **Employer** accounts to the **Guarantor** in terms of clause 4 above, or
   (b) shall lapse on the date of the last **certificate of practical completion**.

8. This guarantee shall not be interpreted as extending the **Guarantor's** liability to anything more than payment of the amount guaranteed.

Signed at ..... on this ..... day of .....20.....

AS WITNESS

1. .....

2. .....

.....
By and on behalf of

.....

.....

(insert the name and physical address of the Guarantor)

Name: .....

Capacity: .....
(Duly authorised thereto by resolution attached marked Annexure A)

Date: .....

A. No alterations and/or additions of the wording of this form will be accepted.
B. The physical address of the Guarantor must be clearly indicated and will be regarded as the Guarantor's *domicilium citandi et executandi*, for all purposes arising from this guarantee.
C. This GUARANTEE must be returned to: .....
.....

C1.3.2: VARIABLE CONSTRUCTION GUARANTEE - JBCC 2000 PRINCIPAL BUILDING AGREEMENT (Edition 5.0 of July 2007)

To:

South African National Biodiversity Institute
Private Bag X101
Silverton
0184

Sir,

VARIABLE CONSTRUCTION GUARANTEE FOR THE EXECUTION OF A CONTRACT IN TERMS OF JBCC 2000 (5.0 EDITION JULY 2007)

5. With reference to the contract between ..... (hereinafter referred to as the "**Contractor**") and the **South African National Biodiversity Institute** (hereinafter referred to as the "**Employer**"), **Contract/Tender No: SANBI G567/2025 Request For Bids for the Appointment of a Contractor for the Repairs to the Existing Timber Roof Trusses and Wet Services at the Kirstenbosch Centre for Biodiversity Conservation Building Including Associated Civil and Building Works at the Harry Molteno Library at the Kirstenbosch National Botanical Garden: Completion Contract** (hereinafter referred to as the "contract") in the amount of (hereinafter referred to as the "contract") in the amount of

R ……..(insert amount), … .....

.....(insert amount in words),
(hereinafter referred to as the contract sum),
I / We, ...

in my/our Capacity as ..... and hereby

representing .....

(hereinafter referred to as the "**Guarantor**") advise that the **Guarantor** holds at the **Employer's** disposal the sum of R....., (insert amount in figures)

.....(insert amount in words)
being 10% of the contract sum (excluding VAT), for the due fulfillment of the contract.

1. I / We advise that the **Guarantor's** liability in terms of this guarantee shall be as follows:

   (a) From and including the date on which this guarantee is issued and up to and including the date of payment of the amount in the last final **payment certificate**, the **Guarantor** will be liable in terms of this guarantee to the maximum amount of 10% of the **contract sum** (excluding VAT);

   (b) The **Guarantor's** liability shall reduce to 3 % of the **contract value** (excluding VAT) as determined at the date of the last **certificate of practical completion**, subject to such amount not exceeding 10% of the **contract sum** (excluding VAT).

   (c) The **Guarantor's** liability shall reduce to 1 % of the **contract value** (excluding VAT) as determined at the date of the last **certificate of final completion**, subject to such amount not exceeding 10 % of the **contract sum** (excluding VAT).

   (d) This guarantee shall expire on the date of the last **final payment certificate**.

   (e) The **practical completion certificate** and the **final completion certificate** referred to in this guarantee shall mean the certificates issued in terms of the contract.

2. The **Guarantor** hereby renounces the benefits of the exceptions *non numeratae punia; non causa debiti; excussionis et divisionis;* and *de duobus vel pluribus reis debendi* which could be pleaded against the enforcement of this guarantee, with the meaning and effect whereof I/we declare myself/ourselves to be conversant, and undertake to y the **Employer** the amount guaranteed on receipt of a written demand from the **Employer** to do so, stating that the **Employer** has a right of recovery against the **Contractor** in terms of 33.0 of the contract.

4. Subject to the above, but without in any way detracting from the **Employer's** rights to adopt any of the procedures provided for in the contract, the said demand can be made by the **Employer** at any stage prior to the expiry of this guarantee.

5. The amount id by the **Guarantor** in terms of this guarantee may be retained by the **Employer** on condition that upon the issue of the last **final payment certificate**, the **Employer** shall account to the **Guarantor** showing how this amount has been expended and refund any balance due to the **Guarantor**.

6. The **Employer** shall have the absolute right to arrange his affairs with the **Contractor** in any manner which the **Employer** deems fit and the **Guarantor** shall not have the right to claim his release on account of any conduct alleged to be prejudicial to the **Guarantor**. Without derogating from the aforegoing, any compromise, extension of the construction period, indulgence, release or variation of the **Contractor's** obligation shall not affect the validity of this guarantee.

7. The **Guarantor** reserves the right to withdraw from this guarantee at any time by depositing the amount guaranteed with the **Employer**, whereupon the **Guarantor's** liability ceases.

8. This guarantee is neither negotiable nor transferable, and

   (a) must be surrendered to the **Guarantor** at the time when the **Employer** accounts to the **Guarantor** in terms of clause 5 above, or
   (b) shall lapse in accordance with clause 2(d) above.

9. This guarantee shall not be interpreted as extending the **Guarantor's** liability to anything more than the payment of the amount guaranteed.

Signed at ..... on this ..... day of ..... 20.....

AS WITNESS

1. .....

2. .....

.....
By and on behalf of

.....

.....

(insert the name and physical address of the Guarantor)

Name: .....

Capacity: .....
(Duly authorised thereto by resolution attached marked Annexure A)

Date: .....

A. No alterations and/or additions of the wording of this form will be accepted.

B. The physical address of the Guarantor must be clearly indicated and will be regarded as the Guarantor's *domicilium citandi et executandi*, for all purposes arising from this guarantee.

C. This GUARANTEE must be returned to: .....

.....

PART C: THE CONTRACT
Part C1: Agreement and Contract Data

PROJECT TITLE:	**REQUEST FOR BIDS FOR THE APPOINTMENT OF A CONTRACTOR FOR THE REPAIRS TO THE EXISTING TIMBER ROOF TRUSSES AND WET SERVICES AT THE KIRSTENBOSCH CENTRE FOR BIODIVERSITY CONSERVATION BUILDING INCLUDING ASSOCIATED CIVIL AND BUILDING WORKS AT THE HARRY MOLTENO LIBRARY AT THE KIRSTENBOSCH NATIONAL BOTANICAL GARDEN: COMPLETION CONTRACT**
CONTRACT NO:	**SANBI G567/2025**

C1.4 Occupational Health and Safety Agreement 37(2)

AGREEMENT MADE AND ENTERED INTO BETWEEN THE

SOUTH AFRICAN NATIONAL BIODIVERSITY INSTITUTE (SANBI)

(Hereinafter called the **"EMPLOYER"**)

.....

(Contractor / Mandatary / Company / CC Name)

IN TERMS OF SECTION 37(2) OF THE OCCUPATIONAL HEALTH AND SAFETY ACT, ACT NO. 85 OF 1993 AS AMENDED

I, ..., representing

....., 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 there under.

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: .....

Or Compensation Insurer: ..... Policy No.: .....

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 Sub-contractors employed by me will enter into an Occupational Health and Safety Agreement separately, and that such Sub-contractors comply with the conditions set.

I hereby declare that I have read and understand the appended Occupational Health and Safety Conditions and undertake to comply therewith at all times.

I hereby also undertake to comply with the Occupational Health and Safety Specification and Plan.

Signed at ..... this ..... day of..... 20.....

....
WITNESS MANDATARY

Signed at ..... this ..... day of..... 20.....

....
WITNESS FOR AND ON BEHALF OF THE EMPLOYER

OCCUPATIONAL HEALTH AND SAFETY CONDITIONS

1. The Chief Executive Officer of the Contractor shall assume the responsibility in terms of Section 16(1) of the Occupational Health and Safety Act (as amended). Should the Contractor assign any duty in terms of Section 16(2), a copy of such assignment shall immediately be provided to the representative of the Employer as defined in the Contract.

2. All work performed on the Employer's premises shall be performed under the supervision of the construction supervisor who understand the hazards associated with any work that the Contractor performs on the site in terms of Construction Regulations 2003.

3. The Contractor shall appoint a Competent Person who shall be trained on any occupational health and safety aspect pertaining to them or to the work that is to be performed.

4. The Contractor shall ensure that he familiarises himself with the requirements of the Occupational Health and Safety Act and that he, his employees, and any sub-contractors, comply with them.

5. Discipline in the interests of occupational health and safety shall be strictly enforced.

6. Personal protective equipment shall be issued by the Contractor as required and shall be worn at all times where necessary.

7. Written safe work procedures and appropriate precautionary measures shall be available and enforced, and all employees shall be made conversant with the contents of these practices.

8. No substandard equipment/machinery/articles or substances shall be used on the site.

9. All incidents referred to in terms of Section 24 of the Occupational Health and Safety Act shall be reported by the Contractor to the Department of Labour and the Employer.

10 The Employer hereby obtains an interest in the issue of any formal inquiry conducted in terms of Section 32 of the Occupational Health and Safety Act and into any incident involving a Contractor and/or his employees and/or his Sub-Contractor/s.

11. No use shall be made of any of the Employer's machinery / plant / equipment / substance / personal protective equipment or any other article without prior arrangement and written approval.

12. No alcohol or any other intoxicating substance shall be allowed on the site. Any person suspected of being under the influence of alcohol or any other intoxicating substance shall not be permitted access to or allowed to remain on the site.

13. Prior to commencement of any work, verified copies of all documents mentioned in the agreement, must be presented to the Employer.

PART C: THE CONTRACT
Part C2: Pricing Data and Bill of Quantities

PROJECT TITLE:	**REQUEST FOR BIDS FOR THE APPOINTMENT OF A CONTRACTOR FOR THE REPAIRS TO THE EXISTING TIMBER ROOF TRUSSES AND WET SERVICES AT THE KIRSTENBOSCH CENTRE FOR BIODIVERSITY CONSERVATION BUILDING INCLUDING ASSOCIATED CIVIL AND BUILDING WORKS AT THE HARRY MOLTENO LIBRARY AT THE KIRSTENBOSCH NATIONAL BOTANICAL GARDEN: COMPLETION CONTRACT**
CONTRACT NO:	**SANBI G567/2025**

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PART C: THE CONTRACT
Part C2: Pricing Instruction and Bill of Quantities

PROJECT TITLE:	**REQUEST FOR BIDS FOR THE APPOINTMENT OF A CONTRACTOR FOR THE REPAIRS TO THE EXISTING TIMBER ROOF TRUSSES AND WET SERVICES AT THE KIRSTENBOSCH CENTRE FOR BIODIVERSITY CONSERVATION BUILDING INCLUDING ASSOCIATED CIVIL AND BUILDING WORKS AT THE HARRY MOLTENO LIBRARY AT THE KIRSTENBOSCH NATIONAL BOTANICAL GARDEN: COMPLETION CONTRACT**
CONTRACT NO:	**SANBI G567/2025**

C2.1 Pricing Instructions

1. GENERAL INFORMATION

a. Bills of Quantities
The **bills of quantities** forms part of and must be read and priced in conjunction with all the other documents forming part of the **contract documents**, the Standard Conditions of Tender, Conditions of Contract, Specifications, Drawings and all other relevant documentation.

b. Value Added Tax
The **contract sum** must include for Value Added Tax (VAT). All rates, provisional sums, etc. in the **bills of quantities** must however be net (exclusive of VAT) with VAT calculated and added to the total value thereof in the Final Summary.

c. Fixed Price Contract
Tenderers are to take note that contract price adjustments are not applicable to this contract. Tenderers should therefore make provision in the **contract sum**, schedule of rates, etc., for possible price increases during the contract period, as no claims in this regard shall be entertained.

2. PRICING INFORMATION

1. These schedules of quantities contain sequentially numbered pages as indicated in the contents list. Tenderers are required to check that the pages in their schedules of quantities are complete. If any pages are duplicated or omitted, or if any quantity or typing is unclear or if the schedules of quantities contain any obvious errors, the tenderer shall immediately notify the engineer so that the problem may be rectified. No responsibility for any errors arising from any of the above shall be accepted by the engineer.

2. The schedules of quantities form part of and shall be read in conjunction with the specification, which contains full description of the work required to be performed and the materials and equipment to be supplied and used in the execution of the works. Tenderers shall refer to the specification for the full meaning and description of work to be executed and materials and equipment to be supplied or used in the execution of the work.

3. Tenders shall be submitted with schedules of quantities completed in full. Non or partial completion of the schedules of quantities shall render tenders liable for disqualification.

4. The total tender price as carried forward to the tender form, after correction for arithmetic extension errors, etc. shall be the contract price as awarded to the successful tenderer. Tenderers are

5. requested to check multiplication and addition of the schedules of quantities. The rate submitted shall be regarded as the price offered per item.

6. No changes, additions or omissions to the contents of the schedules of quantities shall be permitted. If any changes, additions or omissions are made these shall not be recognised and the original wording of the schedules of quantities shall apply.

7. The priced schedules of quantities of tender shall be checked by the principal agent. The principal

agent reserves the right to request adjustments to one or more individual tender prices and to rectify contradictions and thereby alter the total tender price as submitted. The acceptance of this tender does not preclude the principal agent from querying or requesting of the contractor to adjust the rates at any stage during the contract period or any extension thereto.

8. The responsibility of the accuracy of the quantities included in the schedules, remains with the person who prepared the schedules. The tenderer is relieved from the responsibility of the measurement of quantities at tender stage and the tender amounts shall be for the quantities as listed in the schedules. It is however expected from the tenderer to include for minor construction items such as would be required for the complete execution of works in accordance with the specification.

9. The quantities in these schedules of quantities shall not be used for the ordering of materials.

10. Changes in the scope of works included in the schedule of quantities shall be permitted and shall be measured and priced at the tariffs as included in the schedules of quantities and shall form an addition to or omission from the total of the schedule of quantities. Any changes not covered by any rates in the schedules of quantities shall be agreed and priced as non-schedule items in accordance with the conditions of contract.

11. The extent and value of variations shall be in accordance with the conditions of contract. Variations to the works prior to the execution thereof shall be priced as above. Variations to work already executed shall not necessarily be priced in accordance with the schedule of quantities and shall be judged individually on merit.

12. Except where the separate rate for the material and labour components of any item is specifically called for, the unit price of such item shall be deemed to include the supply and installation of that item.

    The description of any items shall, except where otherwise specified, allow for the purchase, delivery, off-loading, storage, packing, lifting, placing, positioning and fixing in position, cutting and wastage, dies and patterns, models and equipment, temporary work, return of packing material, fixing costs, profit or other obligations of the contract arising out of the conditions of contract.
    All items prices shall exclude VAT but include any other tax or levy as applicable.

    All items are measured to the net final quantity as indicated on the drawings with the completed work in the position as indicated on the drawing. All prices and rates shall allow for wastage for whatever reason, irrespective of any other standard measurement which may be currently used elsewhere.

13. Should the contractor identify any additional issues or items which in his opinion are necessary for the complete and proper execution of the works, he shall identify such items in a covering letter attached to his tender and submit rates for these items. Mistakes in the physical measurement of items in the schedules of quantities shall be rectified but no claim shall be considered for the non-measurement of doubtful or minor items or claims resulting of criticism of method of measurement used or descriptions given. The priced schedule of quantities shall not be adjusted on the grounds of the items which in the opinion of the tenderer should have been brought into account unless so detailed in the accompanying letter.

14. The schedule of quantities shall be adjusted to reflect the quantities of materials used on completion of whole or part of the works as a result of remeasurement, qualification or variations. The remeasured quantities shall form the basis for the calculation of payment certificates. The schedules of quantities are not intended for the ordering of materials, etc. and the contractor is advised to extract the quantities for the ordering of materials directly from the drawings and specification. Any order placed directly from the schedules of quantities shall be solely at the contractor's risk.
15. The unit rates as entered in the schedule of quantities with the exclusion of dayworks items shall in all cases include any present and applicable sales tax or similar statutory duties.

PART C: THE CONTRACT
Part C2: Pricing Data and Bill of Quantities

PROJECT TITLE:	**REQUEST FOR BIDS FOR THE APPOINTMENT OF A CONTRACTOR FOR THE REPAIRS TO THE EXISTING TIMBER ROOF TRUSSES AND WET SERVICES AT THE KIRSTENBOSCH CENTRE FOR BIODIVERSITY CONSERVATION BUILDING INCLUDING ASSOCIATED CIVIL AND BUILDING WORKS AT THE HARRY MOLTENO LIBRARY AT THE KIRSTENBOSCH NATIONAL BOTANICAL GARDEN: COMPLETION CONTRACT**
CONTRACT NO:	**SANBI G567/2025**

C2.2 Bill of Quantities

TENDER NO: G567/2025
CLIENT: SOUTH AFRICAN NATIONAL BIODIVERSITY INSTITUTE

FILE NO:

TITLE OF THE PROJECT: ***REQUEST FOR BIDS FOR THE APPOINTMENT OF A CONTRACTOR FOR THE REPAIRS TO THE EXISTING TIMBER ROOF TRUSSES AND WET SERVICES AT THE KIRSTENBOSCH CENTRE FOR BIODIVERSITY CONSERVATION BUILDING INCLUDING ASSOCIATED CIVIL AND BUILDING WORKS AT THE HARRY MOLTENO LIBRARY AT THE KIRSTENBOSCH NATIONAL BOTANICAL GARDEN: COMPLETION CONTRACT***

SCHEDULES FOR REPAIR WORK		**REPAIR**
SCHEDULE NO 1:	PRELIMINARY AND GENERAL	**100**
SCHEDULE NO 2:	STRUCTURAL AND BUILDING RELATED REPAIR WORK: CENTRE FOR BIODIVERSITY CONSERVATION	**200**
SCHEDULE NO 3:	STRUCTURAL AND BUILDING RELATED REPAIR WORK: KIRSTENBOSCH RESEARCH CENTRE	**300**
SCHEDULE NO 4:	STRUCTURAL AND BUILDING RELATED REPAIR WORK: HARRY MOLTENO LIBRARY	**400**
SCHEDULE NO 5:	CIVIL AND STORMWATER RELATED WORK: HARRY MOLTENO LIBRARY	**500**
SCHEDULE NO 6:	PLUMBING AND DRAINAGE RELATED WORK: KIRSTENBOSCH RESEARCH CENTRE AND CENTRE FOR BIODIVERSITY CONSERVATION	**600**
SCHEDULE NO 7:	FIRE FIGHTING EQUIPMENT: KIRSTENBOSCH RESEARCH CENTRE AND CENTRE FOR BIODIVERSITY CONSERVATION	**700**

Tender No: G567/2025

REQUEST FOR BIDS FOR THE APPOINTMENT OF A CONTRACTOR FOR THE REPAIRS TO THE EXISTING TIMBER ROOF TRUSSES AND WET SERVICES AT THE KIRSTENBOSCH CENTRE FOR BIODIVERSITY CONSERVATION BUILDING INCLUDING ASSOCIATED CIVIL AND BUILDING WORKS AT THE HARRY MOLTENO LIBRARY AT THE KIRSTENBOSCH NATIONAL BOTANICAL GARDEN: COMPLETION CONTRACT

SCHEDULE OF QUANTITIES

NB TENDERES MUST COMPLETE THE SCHEDULE OF QUANTITIES IN BLACK INK

SCHEDULE NO 1: PRELIMINARY AND GENERAL (SECTION A)

ITEM	DESCRIPTION	AMOUNT
	MEANING OF TERMS "TENDER / TENDERER" Any reference to the words "Tender" or "Tenderer" herein and/or in any other documentation shall be construed to have the same meaning as the words "Bid" or "Bidder" **PRELIMINARIES** The JBCC Preliminaries Code 2101, July 2007 edition for use with the JBCC Principal Building Agreement Edition 5.0 (Reprint 1) Code 2101, July 2007 is taken to be incorporated herein. The tenderer is deemed to have referred to these documents for the full intent and meaning of each clause. These clauses are referred to by number and heading only. Where standard clauses or options are not applicable to the contract such modifications or corrections as are necessary are given under each relevant clause. Where an item is not relevant to this specific contract such item is marked "N/A" signifying "Not Applicable" **PRICING OF PRELIMINARIES** Should Option A, as set out in clause B10.3.1 hereinafter be used for the adjustment of preliminaries then each item priced is to be allocated to one or more of the three categories Fixed, Value Related or Time Related and the respective amounts entered in the spaces provided under each item Items not priced in these Preliminaries shall be deemed to be included elsewhere in these Bills of Quantities **SECTION A: JBCC PRINCIPAL BUILDING AGREEMENT** **DEFINITIONS**	
A1.0	**DEFINITIONS AND INTERPRETATION** Refer to Contract Data Fixed:_____Value related:_____Time related:_____ **Item**	

SCHEDULE NO 1: PRELIMINARY AND GENERAL (SECTION A)

ITEM	DESCRIPTION	AMOUNT
	OBJECTIVE AND PREPARATION	
A2.0	**OFFER, ACCEPTANCE AND PERFORMANCE** Clause 2.0 Fixed:_____Value related:_____Time related:_____ **Item**	
A3.0	**DOCUMENTS** Clause 3.0 Clause 3.2.1 is amended by replacing “14.1” with “14.0” Clause 3.7 is amended by the addition of the following: The **contractor** shall supply and keep a copy of the **JBCC** Series 2000 Principal Building Agreement and Preliminaries applicable to this contract on the site, to which the employer, **principal agen**t and **agents** shall have access at all times Clause 3.11 is amended by replacing the second reference to “principal agent” with the word **“employer”** Fixed:_____Value related:_____Time related:_____ **Item**	
A4.0	**DESIGN RESPONSIBILITY** Clause 4.0 Fixed:_____Value related:_____Time related:_____ **Item**	
A5.0	**EMPLOYER’S AGENTS** Clause 5.0 Clause 5.1.2 is amended to include clauses 32.6.3, 34.3, 34.4 and 38.5.8 Fixed:_____Value related:_____Time related:_____ **Item**	
A6.0	**CONTRACTOR'S SITE REPRESENTATIVE** Clause 6.0 Fixed:_____Value related:_____Time related:_____ **Item**	

SCHEDULE NO 1: PRELIMINARY AND GENERAL (SECTION A)

ITEM	DESCRIPTION	AMOUNT
A7.0	**COMPLIANCE WITH LAWS AND REGULATIONS** Clause 7.0 Note: A separate clause has been included in Section C: Specific Preliminaries of the **bills of quantities / lump sum document** for the **contractor** to have the opportunity to price for all the requirements of the Occupational Health and Safety Act, Construction Regulations and Health and Safety Specification Fixed:_____Value related:_____Time related:_____ **Item**	
A8.0	**WORKS RISK** Clause 8.0 Fixed:_____Value related:_____Time related:_____ **Item**	
A9.0	**INDEMNITIES** Clause 9.0 Fixed:_____Value related:_____Time related:_____ **Item**	
A10.0	**GENERAL INSURANCES** Clause 10.0 Clause 10.0 is amended by the addition of the following clauses: **10.5 Damage to the Works** (a) Without in any way limiting the **contractor's** obligations in terms of the contract, the contractor shall bear the full risk of damage to and/or destruction of the **works** by whatever cause during construction of the **works** and hereby indemnifies and holds harmless the employer against any such damage. The **contractor** shall take such precautions and security measures and other steps for the protection and security of the **works** as the contractor may deem necessary (b) The **contracto**r shall at all times proceed immediately to remove or dispose of any debris arising from damage to or destruction of the **works** and to rebuild, restore, replace and/or repair the **works** (c) The **employer** shall carry the risk of damage to or destruction of the **works** and materials paid for by the **employer** that is the result of the excepted risks as set out in 10.6 (d) Where the **employer** bears the risk in terms of this contract, the **contractor** shall, if requested to do so, reinstate any damage or destroyed portions of the **works** and the costs of such reinstatement shall be measured and valued in terms of 32.0 hereof	

SCHEDULE NO 1: PRELIMINARY AND GENERAL (SECTION A)

ITEM	DESCRIPTION	AMOUNT
	10.6 Injury to Persons or loss of or damage to Properties (a) The **contractor** shall be liable for and hereby indemnifies the **employer** against any liability, loss, claim or proceeding whether arising in common law or by statute, consequent upon personal injuries to or the death of any person whomsoever arising out of or in the course of or caused by the execution of the **works** unless due to any act or negligence of any person for whose actions the **employer** is legally liable (b) The **contracto**r shall be liable for and hereby indemnifies the employer against any liability, loss, claim or proceeding consequent upon loss of or damage to any moveable or immovable or personal property or property contiguous to the **site**, whether belonging to or under the control of the **employer** or any other body or person, arising out of or in the course of or by reason of the execution of the **works** unless due to any act or negligence of any person for whose actions the **employe**r is legally liable (c) The **contractor** shall, upon receiving a **contract instruction** from the **principal agent**, cause the same to be made good in a perfect and workmanlike manner at his own cost and in default thereof the **employe**r shall be entitled to cause it to be made good and to recover the cost thereof from the **contractor** or to deduct the same from amounts due to the **contractor** (d) The **contractor** shall be responsible for the protection and safety of such portions of the premises placed under his control by the **employer** for the purpose of executing the **works** until the issue of the **certificate of practical completion** (e) Where the execution of the **works** involves the risk of removal of or interference with support to adjoining properties including land or structures or any structures to be altered or added to, the **contracto**r shall obtain adequate insurance and will remain adequately insured or insured to the specific limit stated in the contract against the death of or injury to persons or damage to such property consequent on such removal or interference with the support until such portion of the **works** has been completed **10.7 High risk insurance** In the event of the project being executed in a geological area classified as a “High Risk Area”, that is an area which is subject to highly unstable subsurface conditions that might result in catastrophic ground movement evident by sinkhole or doline formation the following will apply: **10.7.1 Damage to the works** The **contractor** shall, from the **commencement date** of the **works** until the date of the **certificate of practical completion** bear the full risk of and hereby indemnifies and holds harmless the **employer** against any damage to and/or destruction of the **works** consequent upon a catastrophic ground movement as mentioned above. The **contractor** shall take such precautions and security measures and other steps for the protection of the **works** as he may deem necessary When so instructed to do so by the **principal agent**, the **contractor** shall proceed immediately to remove and/or dispose of any debris arising from damage to or destruction of the **works** and to rebuild, restore, replace and/or repair the **works**, at the **contractor’s** own costs	

SCHEDULE NO 1: PRELIMINARY AND GENERAL (SECTION A)

ITEM	DESCRIPTION	AMOUNT
	10.7.2 Injury to persons or loss of or damage to property The **contractor** shall be liable for and hereby indemnifies and holds harmless the **employer** against any liability, loss, claim or proceeding arising at any time during the period of the contract whether arising in common law or by statute, consequent upon personal injuries to or the death of any person whomsoever resulting from, arising out of, or caused by a catastrophic ground movement as mentioned above The **contractor** shall be liable for and hereby indemnifies the **employe**r against any and all liability, loss, claim or proceeding consequent upon loss of or damage to any moveable or immovable or personal property or property contiguous to the **site**, whether belonging to or under the control of the **employer** or any other body or person whomsoever arising out of or caused by a catastrophic ground movement, as mentioned above, which occurred during the period of the contract **10.7.3** It is the responsibility of the **contracto**r to ensure that he has adequate insurance to cover his risk and liability as mentioned in 10.7.1 and 10.7.2. Without limiting the **contractor's** obligations in terms of the contract, the **contractor** shall, within twenty-one (21) **calendar days** of the commencement date but before commencement of the **works**, submit to the employer proof of such insurance policy, if requested to do so **10.7.4** The employer shall be entitled to recover any and all losses and/or damages of whatever nature suffered or incurred consequent upon the **contractor's** default of his obligations as set out in 10.7.1; 10.7.2 and 10.7.3. Such losses or damages may be recovered from the **contractor** or by deducting the same from any amounts still due under this contract or under any other contract presently or hereafter existing between the **employe**r and the **contractor** and for this purpose all these contracts shall be considered one indivisible whole Fixed:_____Value related:_____Time related:_____ **Item**	
A11.0	**SPECIAL INSURANCES** Clause 11.0 Fixed:_____Value related:_____Time related:_____ **Item**	
A12.0	**EFFECTING INSURANCES** Clause 12.0 Fixed:_____Value related:_____Time related:_____ **Item**	

SCHEDULE NO 1: PRELIMINARY AND GENERAL (SECTION A)

ITEM	DESCRIPTION	AMOUNT
A13.0	***No clause***	
A14.0	**SECURITY** Clause 14.0 Clauses 14.1 - 14.8 are amended by replacing them with the following: 14.1 In respect of contracts with a **contract sum** up to R1 million, the **security** to be provided by the **contractor** to the **employer** will be a payment reduction of five per cent (5%) of the value certified in the **payment certificate** (excluding VAT) 14.1.1 The payment reduction of the value certified in a **payment certificate** shall be mutatis mutandi in terms of 31.8(A) 14.1.2 The **employer** shall be entitled to recover expense and loss from the payment reduction in terms of 33.0 provided that the **employer** complies with the provisions of 33.4 in which event the **employer's** entitlement shall take precedence over his obligations to refund the payment reduction **security** or portions thereof to the **contractor** 14.2 In respect of contracts with a **contract sum** above R1 million, the **contractor** shall have the right to select the **security** to be provided in terms of 14.3, 14.4, 14.5, 14.6, or 14.7 as stated in the **schedule**. Such **security** shall be provided to the **employer** within twenty-one (21) **calendar days** from **commencement date**. Should the **contractor** fail to select the **security** to be provided or should the **contractor** fail to provide the **employer** with the selected security within twenty-one (21) **calendar days** from **commencement date**, the **security** in terms of 14.7 shall be deemed to have been selected 14.3 Where **security** as a cash deposit of ten per cent (10%) of the **contract sum** (excluding VAT) has been selected: 14.3.1 The contractor shall furnish the employer with a cash deposit equal in value to ten per cent (10%) of the contract sum (excluding VAT) within twenty-one (21) calendar days from commencement date 14.3.2 Within twenty-one (21) calendar days of the date of practical completion of the works the employer shall reduce the cash deposit to an amount equal to three per cent (3%) of the contract value (excluding VAT), and refund the balance to the contractor 14.3.3 Within twenty-one (21) calendar days of the date of final completion of the works the employer shall reduce the cash deposit to an amount equal to one per cent (1%) of the contract value (excluding VAT) and refund the balance to the contractor 14.3.4 On the date of payment of the amount in the final payment certificate, the employer shall refund the remainder of the cash deposit to the contractor 14.3.5 The employer shall be entitled to recover expense and loss from the cash deposit in terms of 33.0 provided that the employer complies with the provisions of 33.4 in which event the employer's entitlement shall take precedence over his obligations to refund the cash deposit security or portions thereof to the contractor	

SCHEDULE NO 1: PRELIMINARY AND GENERAL (SECTION A)

ITEM	DESCRIPTION	AMOUNT
	14.3.6 The parties expressly agree that neither the employer nor the contractor shall be entitled to cede the rights to the deposit to any third party 14.4 Where security as a variable construction guarantee of ten percent (10%) of the contract sum (excluding VAT) has been selected: 14.4.1 The **contractor** shall furnish the employer with an acceptable variable **construction guarantee** equal in value to ten per cent (10%) of the **contract sum** (excluding VAT) within twenty-one (21) **calendar days** from **commencement date** 14.4.2 The variable **construction guarantee** shall reduce and expire in terms of the Variable **Construction Guarantee** form included in the invitation to tender 14.4.3 The **employer** shall return the variable **construction guarantee** to the **contractor** within fourteen (14) **calendar days** of it expiring 14.4.4 Where the **employer** has a right of recovery against the **contractor** in terms of 33.0, the employer shall issue a written demand in terms of the variable **construction guarantee** 14.5 Where **security** as a fixed **construction guarantee** of five per cent (5%) of the **contract sum** (excluding VAT) and a five per cent (5%) payment reduction of the value certified in the **payment certificate** (excluding VAT) has been selected: 14.5.1 The **contractor** shall furnish a fixed **construction guarantee** to the **employer** equal in value to five per cent (5%) of the **contract sum** (excluding VAT) 14.5.2 The fixed **construction guarantee** shall come into force on the date of issue and shall expire on the date of the last certificate of **practical completion** 14.5.3 The **employer** shall return the fixed **construction guarantee** to the **contractor** within fourteen (14) **calendar days** of it expiring 14.5.4 The payment reduction of the value certified in a **payment certificate** shall be in terms of 31.8 (A) and 34.8 14.5.5 Where the **employer** has a right of recovery against the **contractor** in terms of the 33.0 the **employer** shall be entitled to issue a written demand in terms of the fixed **construction guarantee** or may recover from the payment reduction or may do both 14.6 Where **security** as a cash deposit of five per cent (5%) of the **contract sum** (excluding VAT) and a payment reduction of five per cent (5%) of the value certified in the **payment certificate** (excluding VAT) has been selected: 14.6.1 The **contractor** shall furnish the **employer** with a cash deposit equal in value to five per cent (5%) of the **contract sum** (excluding VAT) within twenty-one (21) **calendar days** from **commencement date**	

SCHEDULE NO 1: PRELIMINARY AND GENERAL (SECTION A)

ITEM	DESCRIPTION	AMOUNT
	14.6.2 Within twenty-one (21) **calendar days** of the date of **practical completion** of the **works** the **employer** shall refund the cash deposit in total to the **contractor** 14.6.3 The payment reduction of the value certified in a **payment certificate** shall be mutatis mutandi in terms of 31.8(A) 14.6.4 Where the **employer** has a right of recovery against the **contractor** in terms of 33.0, the **employer** may issue a written notice in terms of 33.4 or may recover from the payment reduction or may do both 14.7 Where **security** as a payment reduction of ten per cent (10%) of the value certified in the **payment certificate** (excluding VAT) has been selected: 14.7.1 The payment reduction of the value certified in a **payment certificate** shall be mutatis mutandi in terms of 31.8(B) 14.7.2 The **employer** shall be entitled to recover expense and loss from the payment reduction in terms of 33.0 provided that the **employer** complies with the provisions of 33.4 in which event the **employer's** entitlement shall take precedence over his obligations to refund the payment reduction or portions thereof to the **contractor** 14.8 Payments made by the guarantor to the **employer** in terms of the fixed or variable **construction guarantee** shall not prejudice the rights of the **employer** or **contractor** in terms of this **agreement** Fixed:_____Value related:_____Time related:_____ **Item** **EXECUTION** **PREPARATION FOR AND EXECUTION OF THE WORKS** Clause 15.0 Clause 15.1.1 is amended by replacing it with: No clause Clause 15.1.2 is amended by replacing it with: The **security** selected in terms of 14.0 Clause 15.1 is amended by the addition of the following clause: 15.1.4 An acceptable health and safety plan, required in terms of the Occupational Health and Safety Act, 1993 (Act 85 of 1993), within twenty-one (21) **calendar days** of **commencement date**	

SCHEDULE NO 1: PRELIMINARY AND GENERAL (SECTION A)

ITEM	DESCRIPTION	AMOUNT
	Clause 15.2.1 is amended by replacing it with the following clause: Give the **contractor** possession of the **site** within ten (10) **working days** of the **contractor** complying with the terms of 15.1.4 Fixed:_____Value related:_____Time related:_____ **Item** 14.4.1 The **contractor** shall furnish the employer with an acceptable variable **construction guarantee** equal in value to ten per cent (10%) of the **contract sum** (excluding VAT) within twenty-one (21) **calendar days** from **commencement date** 14.4.2 The variable **construction guarantee** shall reduce and expire in terms of the Variable **Construction Guarantee** form included in the invitation to tender 14.4.3 The **employer** shall return the variable **construction guarantee** to the **contractor** within fourteen (14) **calendar days** of it expiring 14.4.4 Where the **employer** has a right of recovery against the **contractor** in terms of 33.0, the employer shall issue a written demand in terms of the variable **construction guarantee** 14.5 Where **security** as a fixed **construction guarantee** of five per cent (5%) of the **contract sum** (excluding VAT) and a five per cent (5%) payment reduction of the value certified in the **payment certificate** (excluding VAT) has been selected: 14.5.1 The **contractor** shall furnish a fixed **construction guarantee** to the **employer** equal in value to five per cent (5%) of the **contract sum** (excluding VAT) 14.5.2 The fixed **construction guarantee** shall come into force on the date of issue and shall expire on the date of the last certificate of **practical completion** 14.5.3 The **employer** shall return the fixed **construction guarantee** to the **contractor** within fourteen (14) **calendar days** of it expiring 14.5.4 The payment reduction of the value certified in a **payment certificate** shall be in terms of 31.8 (A) and 34.8 14.5.5 Where the **employer** has a right of recovery against the **contractor** in terms of the 33.0 the **employer** shall be entitled to issue a written demand in terms of the fixed **construction guarantee** or may recover from the payment reduction or may do both 14.6 Where **security** as a cash deposit of five per cent (5%) of the **contract sum** (excluding VAT) and a payment reduction of five per cent (5%) of the value certified in the **payment certificate** (excluding VAT) has been selected: 14.6.1 The **contractor** shall furnish the **employer** with a cash deposit equal in value to five per cent (5%) of the **contract sum** (excluding VAT) within twenty-one (21) **calendar days** from **commencement date**	

SCHEDULE NO 1: PRELIMINARY AND GENERAL (SECTION A)

ITEM	DESCRIPTION	AMOUNT
	14.6.2 Within twenty-one (21) **calendar days** of the date of **practical completion** of the **works** the **employer** shall refund the cash deposit in total to the **contractor** 14.6.3 The payment reduction of the value certified in a **payment certificate** shall be mutatis mutandi in terms of 31.8(A) 14.6.4 Where the **employer** has a right of recovery against the **contractor** in terms of 33.0, the **employer** may issue a written notice in terms of 33.4 or may recover from the payment reduction or may do both 14.7 Where **security** as a payment reduction of ten per cent (10%) of the value certified in the **payment certificate** (excluding VAT) has been selected: 14.7.1 The payment reduction of the value certified in a **payment certificate** shall be mutatis mutandi in terms of 31.8(B) 14.7.2 The **employer** shall be entitled to recover expense and loss from the payment reduction in terms of 33.0 provided that the **employer** complies with the provisions of 33.4 in which event the **employer's** entitlement shall take precedence over his obligations to refund the payment reduction or portions thereof to the **contractor** 14.8 Payments made by the guarantor to the **employer** in terms of the fixed or variable **construction guarantee** shall not prejudice the rights of the **employer** or **contractor** in terms of this **agreement** 14.9 Should the contractor fail to furnish the security in terms of 14.2, the employer, in his sole discretion and without notification to the contractor, is entitled to change the contractor's selected form of security to that of a ten per cent (10%) payment reduction of the value certified in the payment certificate (excluding VAT), whereafter 14.7 shall be applicable **EXECUTION**	
A15.0	**PREPARATION FOR AND EXECUTION OF THE WORKS** Clause 15.0 Clause 15.1.1 is amended by replacing it with: Clause 15.1.2 is amended by replacing it with: The **security** selected in terms of 14.0 Clause 15.1 is amended by the addition of the following clause: 15.1.4 An acceptable health and safety plan, required in terms of the Occupational Health and Safety Act, (Act 85 of 1993), R84 of February 7, 2014 Construction Regulations that came into effect within twenty-one (21) **calendar days** of **commencement date**	

SCHEDULE NO 1: PRELIMINARY AND GENERAL (SECTION A)

ITEM	DESCRIPTION	AMOUNT
	Clause 15.2.1 is amended by replacing it with the following clause: Give the **contractor** possession of the **site** within ten (10) **working days** of the **contractor** complying with the terms of 15.1.4 Fixed:_____Value related:_____Time related:_____ **Item**	
A16	**SITE AND ACCESS** Clause 16.0 Fixed:_____Value related:_____Time related:_____ **Item**	
A17.0	**CONTRACT INSTRUCTIONS** Clause 17.0 Clause 17.1.11 is amended by deleting the words “and the appointment of Fixed:_____Value related:_____Time related:_____ **Item**	
A18.0	**SETTING OUT OF THE WORKS** Clause 18.0 Fixed:_____Value related:_____Time related:_____ **Item**	
A19.0	**TEMPOARARY WORKS AND PLANT** Clause 19.0 Fixed:_____Value related:_____Time related:_____ **Item**	
A20.0	**NOMINATED SUBCONTRACTORS** Clause 20.0 Clause 20.1.3 is amended by replacing it with the following: No clause Fixed:_____Value related:_____Time related:_____ **Item**	

SCHEDULE NO 1: PRELIMINARY AND GENERAL (SECTION A)

ITEM	DESCRIPTION	AMOUNT
A21.0	**SELECTED SUBCONTRACTORS** Clause 21.0 Clause 21 is amended by replacing it with: No clause Fixed:_____Value related:_____Time related:_____ **Item**	
A22.0	**EMPLOYER'S DIRECT CONTRACTORS** Clause 22.0 Fixed:_____Value related:_____Time related:_____ **Item**	
A23.0	**CONTRACTOR'S DOMESTIC SUBCONTRACTORS** Clause 23.0 Fixed:_____Value related:_____Time related:_____ **Item**	
	COMPLETION	
A24.0	**PRACTICAL COMPLETION** Clause 24.0 Fixed:_____Value related:_____Time related:_____ **Item**	
A25.0	**WORKS COMPLETION** Clause 25.0 Fixed:_____Value related:_____Time related:_____ **Item**	
A26.0	**FINAL COMPLETION** Clause 26.0 Clause 26.1.2 is amended by inserting Fixed:_____Value related:_____Time related:_____ **Item**	
A27.0	**LATENT DEFECTS LIABILITY PERIOD** Clause 27.0 Fixed:_____Value related:_____Time related:_____ **Item**	

SCHEDULE NO 1: PRELIMINARY AND GENERAL (SECTION A)

ITEM	DESCRIPTION	AMOUNT
A28.0	**SECTIONAL COMPLETION** Clause 28.0 Fixed:_____Value related:_____Time related:_____ **Item**	
A29.0	**REVISION OF DATE FOR PRACTICAL COMPLETION** Clause 29.0 Clause 29.2.5 is amended by replacing it with: No clause Fixed:_____Value related:_____Time related:_____ **Item**	
A30.0	**PENALTY FOR LATE OR NON-COMPLETION** Clause 30.0 Fixed:_____Value related:_____Time related:_____ **Item**	
	PAYMENT	
A31.0	**INTERIM PAYMENT TO THE CONTRACTOR** Clause 31.0 Clause 31.5.2 is amended by replacing “14.7.1” with “14.0” Clause 31.8 is amended by replacing it with the following two alternative clauses: **Alternative A** 31.8(A) Where a **security** is selected in terms of 14.1; 14.5 or 14.6, the value of the **works** in terms of 31.4.1 and **materials and goods** in terms of 31.4.2 shall be certified in full. The value certified shall be subject to the following percentage adjustments: 31.8(A).1 Ninety-five per cent (95%) of such value in interim **payment certificates** issued up to the date of **practical completion** 31.8(A).2 Ninety-seven per cent (97%) of such value in interim **payment certificates** issued on the date of **practical completion** and up to but excluding the date of **final completion** 31.8(A).3 Ninety-nine per cent (99%) of such value in interim **payment certificates** issued on the date of f**inal completion** and up to but excluding the final **payment certificate** in terms of 34.6 31.8(A).4 One hundred per cent (100%) of such value in the final **payment certificate** in terms of 34.6 except where the amount certified is in favour of the **employer.** In such an event the payment reduction shall remain at the adjustment level applicable to the final **payment certificate**	

SCHEDULE NO 1: PRELIMINARY AND GENERAL (SECTION A)

ITEM	DESCRIPTION	AMOUNT
	Alternative B 31.8(B) Where **security** as a payment reduction in terms of 14.7 has been selected, the value of the **works** in terms of 31.4.1 and **materials and goods** in terms of 31.4.2 shall be certified in full. The value certified shall be subject to the following percentage adjustments: 31.8(B).1 Ninety per cent (90%) of such value in interim **payment certificate**s issued up to the date of **practical completion** 31.8(B).2 Ninety-seven per cent (97%) of such value in interim **payment certificate**s issued on the date of **practical completion** and up to but excluding the date of **final completion** 31.8(B).3 Ninety-nine per cent (99%) of such value in interim **payment certificates** issued on the date of **final completion** and up to but excluding the final **payment certificate** in terms of 34.6 31.8(B).4 One hundred per cent (100%) of such value in the final **payment certificate** in terms of 34.6 except where the amount certified is in favour of the **employer**. In such an event the payment reduction shall remain at the adjustment level applicable to the final **payment certificate** Clause 31.12 is amended by deleting the following: Payment shall be subject to the employer giving the contractor a tax invoice for the amount due Fixed:_____Value related:_____Time related:_____ **Item**	
A32.0	**ADJUSTMENT TO THE CONTRACT VALUE** Clause 32.0 Clauses 32.5.1, 32.5.4 and 32.5.7 are amended by the addition of the following at the end of the sentence: "due to no fault of the **contracto**r" Fixed:_____Value related:_____Time related:_____ **Item**	
A33.0	**RECOVERY OF EXPENSE AND LOSS** Clause 33.0 Fixed:_____Value related:_____Time related:_____ **Item**	
A34.0	**FINAL ACCOUNT AND FINAL PAYMENT** Clause 34.0 Clause 34.1 is amended by removing Clause 34.2 is amended by inserting	

SCHEDULE NO 1: PRELIMINARY AND GENERAL (SECTION A)

ITEM	DESCRIPTION	AMOUNT
	Clause 34.8 is amended by deleting the words "where **security** as a fixed **construction guarantee** in terms of 14.4 has been selected or where payment reduction has been applied in terms of 14.7.1" Clause 34.13 is amended by replacing "seven (7) **calendar days**" with "twenty-one (21) **calendar days**" and deleting the words "subject to the **employer** giving the **contractor** a tax invoice for the amount due" Fixed:_____Value related:_____Time related:_____ **Item**	
A35.0	**PAYMENT TO OTHER PARTIES** Clause 35.0 Fixed:_____Value related:_____Time related:_____ **Item**	
A36.0	**TERMINATION BY EMPLOYER – CONTRACTOR'S DEFAULT** Clause 36.0 Clause 36.1 is amended by the addition of the following clauses 36.1.3 refuses or neglects to comply strictly with any of the conditions of contract 36.1.4 estate being sequestrated, liquidated or surrendered in terms of the insolvency laws in force within the Republic of South Africa 36.1.5 in the judgement of the **employer**, has engaged in **corrupt** or **fraudulent practices** in competing for or in executing the contract Clause 36.3 is amended by removing the reference to "No clause" and replacing the words **"principal agent"** with **"employer"** Clause 36.0 is amended by the addition of the following clause: Clause 36.0 is amended by the addition of the following clause:\ 36.7 Notwithstanding any clause to the contrary, on cancellation of this **agreement** either by the **employer** or the **contractor**; or for any reason whatsoever, the contractor shall on written instruction, discontinue with the **works** on a date stated and withdraw himself from the site. The contractor shall not be entitled to refuse to withdraw from the **works** on the grounds of any lien or right of retention or on the grounds of any other right whatsoever Fixed:_____Value related:_____Time related:_____ **Item**	

SCHEDULE NO 1: PRELIMINARY AND GENERAL (SECTION A)

ITEM	DESCRIPTION	AMOUNT
A37.0	**TERMINATION BY EMPLOYER – LOSS AND DAMAGE** Clause 37.0 Clause 37.3.5 is amended by replacing “ninety (90)” with “one-hundred and twenty (120)” Clause 37.0 is amended by the addition of the following clause: 37.5 Notwithstanding any clause to the contrary, on cancellation of this **agreement** either by the **employer** or the **contractor**; or for any reason whatsoever, the **contractor** shall on written instruction, discontinue with the **works** on a date stated and withdraw himself from the **site**. The **contractor** shall not be entitled to refuse to withdraw from the works on the grounds of any lien or right of retention or on the grounds of any other right whatsoever Fixed:_____Value related:_____Time related:_____ **Item**	
A38.0	**TERMINATION BY CONTRACTOR – EMPLOYER’S DEFAULT** Clause 38.0 Clause 38.5.4 is amended by replacing “ninety (90)” with “one-hundred and twenty (120)” Clause 38.0 is amended by the addition of the following clause: 38.7 Notwithstanding any clause to the contrary, on cancellation of this **agreement** either by the **employer** or the **contractor;** or for any reason whatsoever, the **contractor** shall on written instruction, discontinue with the **works** on a date stated and withdraw himself from the **site**. The **contractor** shall not be entitled to refuse to withdraw from the **works** on the grounds of any lien or right of retention or on the grounds of any other right whatsoever Fixed:_____Value related:_____Time related:_____ **Item**	
A39.0	**TERMINATION – CESSATION OF THE WORKS** Clause 39.0 Clause 39.3.5 is amended by the addition of the following at the end of the sentence: “within one hundred and twenty (120) **working days** of completion of such a report” Fixed:_____Value related:_____Time related:_____ **Item**	

SCHEDULE NO 1: PRELIMINARY AND GENERAL (SECTION A)

ITEM	DESCRIPTION	AMOUNT
A40.0	**DISPUTE** **SETTLEMENT OF DISPUTES** Clause 40.0 Clause 40.2.2 is amended by replacing “one (1) year” with “three (3) years” Clause 40.6 is amended by removing the reference to: No clause Clause 40.7.1 is amended by replacing “(10)” with “(15)” and by the addition of the following: Whether or not mediation resolves the dispute, the parties shall bear their own costs concerning the mediation and equally share the costs of the mediator and related costs Fixed:_____Value related:_____Time related:_____ **Item**	

SCHEDULE NO 1: PRELIMINARY AND GENERAL (SECTION B)

ITEM	DESCRIPTION	AMOUNT
B1.1	***Definitions and interpretation*** See also clause A1.0 of Section A for additional and/or amended definitions which shall apply equally to this Section Fixed:_____Value related:_____Time related:_____ **Item**	
B2.0	**DOCUMENTS**	
B2.1	***Checking of documents*** Fixed:_____Value related:_____Time related:_____ **Item**	
B2.2	***Provisional bills of quantities*** Fixed:_____Value related:_____Time related:_____ **Item**	
B2.3	***Availability of construction documentation*** Fixed:_____Value related:_____Time related:_____ **Item**	
B2.4	***Interests of agents*** Fixed:_____Value related:_____Time related:_____ **Item**	
B2.5	***Priced documents*** Fixed:_____Value related:_____Time related:_____ **Item**	
B2.6	***Tender submission*** Clause 2.6 is amended by replacing “JBCC Form of Tender” with “The Tender Page 97” Fixed:_____Value related:_____Time related:_____ **Item**	

SCHEDULE NO 1: PRELIMINARY AND GENERAL (SECTION B)

ITEM	DESCRIPTION	AMOUNT
B3.0	**THE SITE**	
B3.1	***Defined works area***	
B3.2	***Geotechnical investigation***	
	Fixed:_____Value related:_____Time related:_____ **Item**	
B3.3	***Inspection of the site***	
	Fixed:_____Value related:_____Time related:_____ **Item**	
B3.4	***Existing premises occupied***	
	Fixed:_____Value related:_____Time related:_____ **Item**	
B3.5	***Previous work – dimensional accuracy***	
	Fixed:_____Value related:_____Time related:_____ **Item**	
B3.6	***Previous work – defects***	
	Fixed:_____Value related:_____Time related:_____ **Item**	
B3.7	***Services – known***	
	Fixed:_____Value related:_____Time related:_____ **Item**	
B3.8	***Services – unknown***	
	Fixed:_____Value related:_____Time related:_____ **Item**	
B3.9	***Protection of trees***	
	Fixed:_____Value related:_____Time related:_____ **Item**	
B3.9	***Protection of trees***	
	Fixed:_____Value related:_____Time related:_____ **Item**	

SCHEDULE NO 1: PRELIMINARY AND GENERAL (SECTION B)

ITEM	DESCRIPTION	AMOUNT
B3.10	***Articles of value***	
	Fixed:_____Value related:_____Time related:_____	
	Item	
B3.11	***Inspection of adjoining properties***	
	Fixed:_____Value related:_____Time related:_____	
	Item	
B4. 0	**MANAGEMENT OF CONTRACT**	
B4.1	***Management of the works***	
	Fixed:_____Value related:_____Time related:_____	
	Item	
B4.2	***Programme for the works***	
	Fixed:_____Value related:_____Time related:_____	
	Item	
B4.3	***Progress meetings***	
	Fixed:_____Value related:_____Time related:_____	
	Item	
B4.4	***Technical meetings***	
	Fixed:_____Value related:_____Time related:_____	
	Item	
B4.5	***Labour and plant records***	
	Fixed:_____Value related:_____Time related:_____	
	Item	
B5.0	**SAMPLES, SHOP DRAWINGS AND MANUFACTURERS' INSTRUCTIONS**	
B5.1	***Samples of materials***	
	Fixed:_____Value related:_____Time related:_____	
	Item	
B5.2	***Workmanship samples***	
	Fixed:_____Value related:_____Time related:_____	
	Item	

SCHEDULE NO 1: PRELIMINARY AND GENERAL (SECTION B)

ITEM	DESCRIPTION	AMOUNT
B5.3	***Shop drawings*** Fixed:_____Value related:_____Time related:_____ **Item**	
B5.4	***Compliance with manufacturers' instructions*** Fixed:_____Value related:_____Time related:_____ **Item**	
B6.0	**TEMPORARY WORKS AND PLANT**	
B6.1	***Deposits and fees*** Fixed:_____Value related:_____Time related:_____ **Item**	
B6.2	***Enclosure of the works*** Fixed:_____Value related:_____Time related:_____ **Item**	
B6.3	***Advertising*** Fixed:_____Value related:_____Time related:_____ **Item**	
B6.4	**Plant, equipment, sheds and offices** Fixed:_____Value related:_____Time related:_____ **Item**	
B6.5	***Main notice board*** Fixed:_____Value related:_____Time related:_____ **Item**	
B6.6	***Subcontractors' notice board*** Fixed:_____Value related:_____Time related:_____ **Item**	
B7.0	**TEMPORARY SERVICES**	
B7.1	***Location*** Fixed:_____Value related:_____Time related:_____ **Item**	

SCHEDULE NO 1: PRELIMINARY AND GENERAL (SECTION B)

ITEM	DESCRIPTION	AMOUNT
B7.2	***Water***	
	Fixed:_____Value related:_____Time related:_____	
	Item	
B7.3	***Electricity***	
	Fixed:_____Value related:_____Time related:_____	
	Item	
B7.4	***Telecommunication facilities***	
	Fixed:_____Value related:_____Time related:_____	
	Item	
B7.5	***Ablution facilities***	
	Fixed:_____Value related:_____Time related:_____	
	Item	
B8.0	**PRIME COST AMOUNTS**	
B8.1	***Responsibility for prime cost amounts***	
	Fixed:_____Value related:_____Time related:_____	
	Item	
B9.0	**ATTENDANCE ON N/S SUBCONTRACTORS**	
B9.1	***General attendance***	
	Fixed:_____Value related:_____Time related:_____	
	Item	
B9.2	***Special attendance***	
	Fixed:_____Value related:_____Time related:_____	
	Item	
B9.3	***Commissioning – fuel, water and electricity***	
	Fixed:_____Value related:_____Time related:_____	
	Item	

SCHEDULE NO 1: PRELIMINARY AND GENERAL (SECTION B)

ITEM	DESCRIPTION	AMOUNT
B10.0	***FINANCIAL ASPECTS***	
B10.1	***Statutory taxes, duties and levies***	
	Fixed:_____Value related:_____Time related:_____ **Item**	
B10.2	***Payment for preliminaries***	
	Fixed:_____Value related:_____Time related:_____ **Item**	
B10.3	***Adjustment of preliminaries***	
	Clauses B10.3.1 and B10.3.2 are amended by replacing "within fifteen (15) **working days** of taking possession of the **site"** with "when submitting his priced Fixed:_____Value related:_____Time related:_____ **Item**	
B10.4	***Payment certificate cash flow***	
	Fixed:_____Value related:_____Time related:_____ **Item**	
B11.0	**GENERAL**	
B11.1	***Protection of the works***	
	Fixed:_____Value related:_____Time related:_____ **Item**	
B11.2	***Protection / isolation of existing / sectionally occupied works***	
	Fixed:_____Value related:_____Time related:_____ **Item**	
B11.3	***Security of the works***	
	Fixed:_____Value related:_____Time related:_____ **Item**	
B11.4	***Notice before covering work***	
	Fixed:_____Value related:_____Time related:_____ **Item**	

SCHEDULE NO 1: PRELIMINARY AND GENERAL (SECTION B)

ITEM	DESCRIPTION	AMOUNT
B11.5	***Disturbance*** Fixed:_____Value related:_____Time related:_____ **Item**	
B11.6	***Environmental disturbance*** Fixed:_____Value related:_____Time related:_____ **Item**	
B11.7	***Works cleaning and clearing*** Fixed:_____Value related:_____Time related:_____ **Item**	
B11.8	***Vermin*** Fixed:_____Value related:_____Time related:_____ **Item**	
B11.9	***Overhand work*** Fixed:_____Value related:_____Time related:_____ **Item**	
B11.10	***Instruction manuals and guarantees*** Fixed:_____Value related:_____Time related:_____ **Item**	
B11.11	***As built information*** Fixed:_____Value related:_____Time related:_____ **Item**	
B11.12	**Tenant installations** Fixed:_____Value related:_____Time related:_____ **Item**	

SCHEDULE NO 1: PRELIMINARY AND GENERAL (SECTION B)

ITEM	DESCRIPTION	AMOUNT
B12.0	**SCHEDULE OF VARIABLES**	
B12.1	***Schedule of variables***	
	This **schedule** contains all variables referred to in this document and is divided into pre-tender and post-tender categories. The pre-tender category must be completed in full and included in the tender documents. Both the pre-tender and post-tender categories form part of these **Preliminaries**	
	12,1,1 **PRE-TENDER INFORMATION**	
	Refer to Contract Data	
	12,1,2 **POST-TENDER INFORMATION**	
	Refer to Contract Data	
	Fixed:_____Value related:_____Time related:_____ **Item**	

SCHEDULE NO 1: PRELIMINARY AND GENERAL (SECTION C)

ITEM	DESCRIPTION	AMOUNT
	SECTION C: SPECIFIC PRELIMINARIES **Section C** contains specific preliminary items which apply to this contract except where N/A (Not Applicable) appears against an item	
C1.0	**CONTRACT DRAWINGS** * Select relevant paragraph and delete whichever is not applicable depending on whether the contract is based on a ***bills of quantities*** or ***lump sum document*** * The drawings issued with the tender documents do not comprise the complete set but serve as a guide only for tendering purposes and for indicating the scope of the work to enable the tenderer to acquaint himself with the nature and extent of the **works** and the manner in which they are to be executed Should any part of the drawings not be clearly understood by the tenderer he shall, before submitting his tender, obtain clarification in writing from the **principal agent** Fixed:_____Value related:_____Time related:_____ **Item**	
C2.0	**PREAMBLES** The Specifications shall be read in conjunction with the **bills of quantities / lump sum document** and be referred to for the full descriptions of work to be done and materials to be used The specifications are issued and shall be read in conjunction with the drawings and the **bills of quantities / lump sum document** Fixed:_____Value related:_____Time related:_____ **Item**	
C3.0	**TRADE NAMES** Wherever a trade name for any product has been described in the **bills of quantities / lump sum document**, the tenderer's attention is drawn to the fact that any other product of equal quality may be used subject to the written approval of the **principal agent** being obtained prior to the closing date for submission of tenders If prior written approval for an alternative product is not obtained, the product described shall be deemed to have been tendered for Fixed:_____Value related:_____Time related:_____ **Item**	

SCHEDULE NO 1: PRELIMINARY AND GENERAL (SECTION C)

ITEM	DESCRIPTION	AMOUNT
C4.0	**IMPORTED MATERIALS AND EQUIPMENT** Where imported items are listed in the tender documents, the tenderer shall provide all the information called for, failing which the price of any such item, materials or equipment shall be excluded from currency fluctuations. (refer to Annexure D Imported Content Declaration) Notwithstanding any provisions elsewhere regarding the adjustment of contract prices, the price of any item, material or equipment listed in terms of this clause shall be excluded from the Contract Price Adjustment Provisions (if applicable) Fixed:_____Value related:_____Time related:_____ **Item**	
C5.0	**OCCUPATIONAL HEALTH AND SAFETY ACT** The **contractor** shall comply with all the requirements as set out in the Construction Regulations, 2014 issued under the Occupational Health and Safety Act, 1993 (Act No 85 of 1993) It is required of the **contractor** to thoroughly study the Health and Safety Specification that must be read together with and is deemed to be incorporated under this Section of the **bills of quantities / lump sum document** The **contractor** must take note that compliance with the Occupational Health and Safety Act, Construction Regulations and Health and Safety Specification is compulsory. In the event of partial or total non-compliance, the **principal agent**, notwithstanding the provisions of clause A31.0 of Section A or any other clause to the contrary, reserves the right to delay issuing any progress **payment certificate** until the **contractor** provides satisfactory proof of compliance. The **contractor** shall not be entitled to any compensation of whatsoever nature, including interest, due to such delay of payment Provision for pricing of the Occupational Health and Safety Act, Construction Regulations and Health and Safety Specification is made under this clause and it is explicitly pointed out that all requirements of the aforementioned are deemed to be priced hereunder and no additional claims in this regard shall be entertained 0.1 Preparation of Health and Safety Plan. Implementation and maintenance of Health and Safety Plan Fixed:_____Value related:_____Time related:_____ **Item**	

SCHEDULE NO 1: PRELIMINARY AND GENERAL (SECTION C)

ITEM	DESCRIPTION	AMOUNT
	0.2 Health and Safety Training. Implementation and maintenance of Training Fixed:_____Value related:_____Time related:_____ **Item** 0.3 Personal Protective Clothing and equipment. Maintenance of Personal Protective Clothing and Equipment Fixed:_____Value related:_____Time related:_____ **Item** 0.4 Fences, Signs and Barricades. Maintenance of Fence, Signs and Barricades Fixed:_____Value related:_____Time related:_____ **Item** 0.5 Establishment of Safety Administration. Implementation and maintenance of Safety Administration Fixed:_____Value related:_____Time related:_____ **Item** 0.6 Other Health and Safety Fixed-charge Obligations. Other Health and Safety Time-Related Obligations Fixed:_____Value related:_____Time related:_____ **Item**	

SCHEDULE NO 1: PRELIMINARIES AND GENERAL

COLLECTION Item		Page	AMOUNT
	SECTION A: JBCC PRINCIPAL BUILDING AGREEMENT		
	Definitions		
A1.0	Definitions and interpretation	1.1-1	
	Objective and Preparation		
A2.0	Offer, acceptance and performance	1.1-2	
A3.0	Documents	1.1-2	
A4.0	Design responsibility	1.1-2	
A5.0	Employer's agents	1.1-2	
A6.0	Contractor's Site representative	1.1-2	
A7.0	Compliance with laws and regulations	1.1-3	
A8.0	Works risk	1.1-3	
A9.0	Indemnities	1.1-3	
A10.0	General insurances	1.1-3	
A11.0	Special insurances	1.1-5	
A12.0	Effecting insurances	1.1-5	
A13.0	Assignment	1.1-6	
A14.0	Security	1.1-6	
	Execution		
A15.0	Preparation for and execution of the works	1.1-10	
A16.0	Site and Access	1.1-11	
A17.0	Contract instructions	1.1-11	
A18.0	Setting out of the works	1.1-11	
A19.0	Temporary Works and Plant	1.1-11	
A20.0	Nominated subcontractors	1.1-11	
A21.0	Selected subcontractors	1.1-12	
A22.0	Employer's direct contractors	1.1-12	
A23.0	Contractor's domestic subcontractors	1.1-12	
	Completion		
A24.0	Practical completion	1.1-12	
A25.0	Works completion	1.1-12	
A26.0	Final completion	1.1-12	
A27.0	Latent defects liability period	1.1-12	
A28.0	Sectional completion	1.1-13	
A29.0	Revision of date for practical completion	1.1-13	
A30.0	Penalty for late or non-completion	1.1-13	
	Payment		
A31.0	Interim payment to the contractor	1.1-13	
A32.0	Adjustment to the contract value	1.1-14	
A33.0	Recovery of expense and loss	1.1-14	
A34.0	Final account and final payment	1.1-14	
A35.0	Payment to other parties	1.1-15	
	Cancellation		
A36.0	Termination by employer – contractor's default	1.1-15	
A37.0	Termination by employer – loss and damage	1.1-16	
A38.0	Termination by contractor – employer's default	1.1-16	
A39.0	Termination – cessation of the works	1.1-16	
	Dispute		
A40.0	Settlement of disputes	1.1-17	
		Carried forward R	

SCHEDULE NO 1: PRELIMINARIES AND GENERAL

COLLECTION Item		Page	AMOUNT
	SECTION B: JBCC PRELIMINARIES		
B1.0	Definitions and interpretation		
B1.1	Definitions and interpretation	1.1-18	
B2.0	**Documents**		
B2.1	Checking of documents	1.1-18	
B2.2	Provisional bills of quantities	1.1-18	
B2.3	Availability of construction documentation	1.1-18	
B2.4	Interests of agents	1.1-18	
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B3.0	**The Site**		
B3.1	Defined works area	1.1-19	
B3.2	Geotechnical investigation	1.1-19	
B3.3	Inspection of the site	1.1-19	
B3.4	Existing premises occupied	1.1-19	
B3.5	Previous work – dimensional accuracy	1.1-19	
B3.6	Previous work – defects	1.1-19	
B3.7	Services – known	1.1-19	
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B4.0	**Management of contract**		
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B4.3	Progress meetings	1.1-20	
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B5.0	**Samples, shop drawings and manufacturers' instructions**		
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B5.2	Workmanship samples	1.1-20	
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B6.0	**Temporary works and plant**		
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B6.2	Enclosure of the works	1.1-21	
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B7.0	**Temporary services**		
B7.1	Location	1.1-21	
B7.2	Water	1.1-22	
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SCHEDULE NO 1: PRELIMINARIES AND GENERAL

COLLECTION Item		Page	AMOUNT
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B9.0	**Attendance on N/S subcontractors**		
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B10	**Financial aspects**		
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B11.0	**General**		
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B11.10	Instruction manuals and guarantees	1.1-24	
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B12.1	Schedule of variables	1.1-25	
	Carried forward R		

SCHEDULE NO 1: PRELIMINARIES AND GENERAL

COLLECTION Item		Page	AMOUNT
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	CARRIED TO FINAL SUMMARY	R	
	SUBTOTALS:		
	Category: Fixed R		
	Category: Value R		
	Category: Time R		

SCHEDULE NO 2: STRUCTURAL AND BUILDING RELATED REPAIR WORK: CENTRE FOR BIODIVERSITY CONSERVATION

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QUAN-TITY	RATE	AMOUNT
		NOTE: BILL OF QUANTITIES TO BE READ IN CONJUCTION WITH DRAWINGS PROVIDED				
	200.00	**STRUCTURAL AND BUILDING ROOF A**				
		All final dimensions and designs shall be the responsibility of the contractor, who is to ensure that the truss design accommodates the retrofitted solar panels and existing mechanical ducting. The contractor shall carry out and verify the design in full compliance with the manufacturer's specifications and applicable design parameters.				
		Tenderers are advised that the truss descriptions provided are indicative of overall size only and do not constitute the final design. The contractor is to undertake the complete structural design of the trusses, which must be reviewed and monitored on site by a registered ITC-certified person for compliance during fabrication and installation.				
		The selection of the structural design approach and the construction methodology, including the decision to fabricate trusses off-site or to assemble them in-situ within the roof void, shall remain at the discretion of the contractor. In cases where in-situ fabrication is adopted, the contractor shall ensure that all structural connection designs are undertaken in accordance with relevant SANS standards, ITC guidelines, and manufacturer's requirements, with due consideration of load paths, joint capacities, tolerances, and installation sequencing. The full cost implications of connection detailing, fabrication processes, and erection methodology shall be incorporated into the tender pricing, with no provisional allowances.				
		Prices to include all temporary bracing and supports while construction is carried out.				
	201.00	**BA: ROOFS**				
BA.01	**201.01**	**Install cladding and sheeting:**				
		.01 0,6 mm "Kliplok" or similar approved sheeting roll formed in continuous lengths from certified steel, all to carry a minimum 20-year guarantee for both the material and paintwork fixed to timber purlins or rails complete with flashing:				
		.01 Roof covering with pitches exceeding 15°, fixed to timber or steel purlins	m^2	120		
	Carried forward					

SCHEDULE NO 2: STRUCTURAL AND BUILDING RELATED REPAIR WORK: CENTRE FOR BIODIVERSITY CONSERVATION

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QUAN-TITY	RATE	AMOUNT
		Brought forward				
		.02 Carefully refix existing “Kliplok” profile roof sheeting and timber purlins previously stockpiled; include for replacing any damaged fixings with new matching components, ensuring proper alignment, watertight joints, and installation in accordance with manufacturer’s specifications.	m^2	600		
		.03 Supply and installation of "Kliplok" concealed fix roof sheet clips (KL 65) or similar approved with screws and all ancillary items.	No	350		
BA.03	**201.02**	**Carefully remove existing cladding and sheeting**				
		.01 Carefully remove existing “Kliplok” profile sheet metal roof covering and associated timber purlins; stack and stockpile materials neatly on site for re-use.	m^2	600		
BA.06	**201.03**	**Supply and install sundry items, etc.:**				
		.01 Galvanised sheet iron flashings with CHROMADEK or similar approved silicone polyester finish to one side of sundry items to Kliplok or concealed fixing roof sheeting complete as detailed in BA 03.01:				
		.01 Ridge flashing	m	85		
BA.08	**201.04**	**Install existing rainwater goods:**				
		.01 Reinstall existing box gutters and downpipes:				
		.01 Eaves box gutters	m	100		
		.02 80 mm dia downpipe	m	70		
BA.09	**201.05**	**Carefully remove existing rainwater goods:**				
		.01 Eaves box gutters	m	100		
		.02 Down pipes	m	70		
BB.01	**202.00**	**BB: CARPENTRY AND JOINERY**				
	202.01	**Timber roof truss (refer to DWG_0546-02):**				
		.01 Truss engineering design and preparation of detail design drawings and cut lists (including all inspections).	Sum	1		
		Carried forward				

SCHEDULE NO 2: STRUCTURAL AND BUILDING RELATED REPAIR WORK: CENTRE FOR BIODIVERSITY CONSERVATION

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QUAN-TITY	RATE	AMOUNT
	Brought forward					
	202.01 cont.	.02 Design, manufacture and deliver to site new multi-ply truss for the replacement of existing prefabricated timber roof trusses including all bolts, washers, screws and ancillary items.				
		.01 Supply new prefrabricated 2 ply "HD1" trusses with bolts, washers and screws.	No	4		
		.02 Supply new prefrabricated 3 ply "HG1" trusses with bolts, washers and screws.	No	2		
		.03 Design, manufacture and deliver to site new prefabricated replica timber roof truss for the plying of existing timber trusses, to create a multi-ply truss construction including all bolts, washers, screws and ancillary items.				
		.01 Supply new "HG2" replica prefabricated timber truss with bolts, washers and screws.	No	2		
		.02 Supply new "HG3" replica prefabricated timber truss with bolts, washers and screws.	No	2		
		.03 Supply new "HG4" replica prefabricated timber truss with bolts, washers and screws.	No	2		
		.04 Supply new "G2" replica prefabricated timber truss with bolts, washers and screws.	No	14		
		.05 Supply new "T1" replica prefabricated timber truss with bolts, washers and screws.	No	12		
		.04 Supply full length single timber members for plying/scabbing of "T1" truss top chords, with timber fixing screws at 300 mm c/c or similar approved:				
		.01 114 x 38 mm Grade S7 timber scabs (6m lengths).	No	17		
		.05 Supply full length single timber members for plying/scabbing of truss top chords of "T2" and "T3" trusses, timber fixing screws at 300 mm c/c or similar approved:				
		.01 114 x 38 mm Grade S7 timber scabs (6m lengths).	No	20		
		.02 "T2" and "T3" trusses at the lift shaft to be repaired and configured as per details provided.	No	4		
	Carried forward					

SCHEDULE NO 2: STRUCTURAL AND BUILDING RELATED REPAIR WORK: CENTRE FOR BIODIVERSITY CONSERVATION

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QUAN-TITY	RATE	AMOUNT
	Brought forward					
		.06 Supply full length single timber member for plying/scabbing of "R7" eaves rafters, with timber fixing screws at 300 mm c/c or similar approved:				
		.01 152x 38 mm Grade S7 timber scab, H3 treated and shaped to match existing members (2.5 m lengths).	No	19		
		.07 Supply full length timber member for plying/scabbing of "R2" and "R6" eaves rafters, with timber fixing screws at 300 mm c/c or similar approved:				
		.01 152 x 38 mm Grade S7 timber scabs H3 treated and shaped to match existing members, to be fixed on each side of "R2" and "R6" member (2.5 m lengths).	No	8		
		.08 Allow for the provision, erection, use, dismantling and transportation of scaffolding for access control on building perimeter, up to a three-story height for duration of work including certification, delivery, collection and dismantling.	Sum	1		
		.09 Allow for the provision of mobile crane services, including delivery and collection for the duration of the works.				
		.01 Crane with a lifting capacity of 4000 kg and a lifting height of 16.65 m.	Sum	1		
	202.02	**Timber connections:**				
		.01 Supply steel bracket for the fixing of existing eaves rafter members ("R1" to "R7") to the existing perimeter steel channel as per DWG_0546-03 and 0546-06:				
		.01 Supply 50 x 50 x 5 mm L-section (150 mm long) with bolts and washers.	No	150		
		.02 Supply steel bracket for the fixing of existing eaves rafter members ("R1" to "R7") to the existing laminated eaves beam as per DWG_0546-03 and 0546-06:				
		.01 Supply 50 x 50 x 5 mm mild steel equal angle bracket (150 mm long) with bolts and washers.	No	150		
	Carried forward					

SCHEDULE NO 2: STRUCTURAL AND BUILDING RELATED REPAIR WORK: CENTRE FOR BIODIVERSITY CONSERVATION

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QUAN-TITY	RATE	AMOUNT
		Brought forward				
		.03 Supply steel bracket for the fixing of existing laminated eaves beams to heel ends of the existing "T1", "T2", "T3" and "G2" trusses and girders as per DWG_0546-03 and 0546-06:				
		.01 Supply 50 x 50 x 5 mm mild steel equal angle bracket (100 mm long) with bolts and washers.	No	300		
		.04 Supply truss fixing brackets at truss hipsets:				
		.01 45 degree truss hanger with nails.	No	16		
		.02 90 degree truss hanger with nails.	No	14		
		.03 Heavy duty H45V8P2 Cleat/ T-bracket or similar approved with bolts and washers as per DWG_0546-03 and 0546-06.	No	4		
		.05 Supply prepunched tri-strap bracing for truss tie down detail at perimeter walls as per DWG_0546-03:				
		.01 Double tri-strap bracing with timber and masonry nails or similar approved.	No	150		
		.06 Supply prepunched tri-strap bracing for eaves beam tie down detail at perimeter walls as per DWG_0546-03:				
		.01 Single tri-strap bracing with timber and masonry nails or similar approved.	No	150		
	202.03	**Truss bracing:**				
		.01 Supply timber bracing members for the bracing of bottom chords, top chords and webs with timber fixing screws or similar approved:				
		.01 76 x 38 grade S5 bracing.	m	600		
		.02 152 x 38 grade S5 T-bracing at truss "HG3".	m	10		
	202.04	**Purlin connections:**				
		.01 Supply swing fix wire fixing for purlins.	No	700		
	202.05	**Bolts, Fasteners, etc:**				
		.01 65 mm MiTek eCo Self drilling screws or similar approved.	No	100		
		.02 45 mm Wafer head class 3 timber fix screw T17 class or similar approved.	No	1000		
		Carried forward				

SCHEDULE NO 2: STRUCTURAL AND BUILDING RELATED REPAIR WORK: CENTRE FOR BIODIVERSITY CONSERVATION

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QUAN-TITY	RATE	AMOUNT
		Brought forward				
		.03 TX40 160 x 8 mm timber fixing screw.	No	100		
		.04 TX40 180 x 8 mm timber fixing screw.	No	150		
		.05 TX40 240 x 8 mm timber fixing screw.	No	250		
		.06 Truss fixings to girders:				
		.01 Supply permfix nails or similar approved for tie beam brackets (truss connections to girders).	No	90		
		.02 Supply hurricane clips with permfix nails or similar approved (truss connections to girders at top chord level).	No	90		
	202.06	**Labour:**				
		.01 Labour for erection of timber roof structure truss members including fixing, fixing in position of girders, trusses, beams, rafters, hips, valleys, bracing, battens, wall plates, cleats, tri-strap bracing and proper securing of all items as required by fixing details and engineer.	m^2	900		
BB.02	**202.07**	**Ceilings:**				
		.01 Install:				
		.01 Sisalation 420 heavy industrial grade aluminium foil over rafters at approximately 760 mm centres including straining wires	m^2	300		
		.02 Mild steel galvanised cold formed steel angle ceiling suspension members (25 × 25 mm × 2.0 mm thick) 1000 mm long, fixed vertically between timber truss bottom chords to support ceiling brandering/grid.	No	200		
		.02 6,4mm "Rhino" or similar approved gypsum plasterboard with 50mm cover strips of mesh scrim nailed over joints and the whole finished with 6mm minimum cretestone gypsum skim plaster or similar approved, trowelled to smooth polished surface:				
		.01 Ceilings fixed to and including 38 x 38 mm sawn softwood brandering at 400 mm centres fixed to timber trusses	m^2	300		
		.03 6 mm 'Nutec' or similar approved fibre cement ceiling fixed with 32 x 2.5 mm galvanised serrated nails at 150 mm centres in one direction with painted H-profile jointed strip:				
		.01 Ceilings fixed to and including 38 x 38 mm sawn softwood brandering at 400 mm centres fixed to timber trusses	m^2	260		
		Carried forward				

SCHEDULE NO 2: STRUCTURAL AND BUILDING RELATED REPAIR WORK: CENTRE FOR BIODIVERSITY CONSERVATION

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QUAN-TITY	RATE	AMOUNT
		Brought forward				
BB.04	**202.08**	**Alterations and repairs to existing structures:**				
		.01 Carefully remove:				
		.01 Remove existing rafter members from "HD1", "HG1" and "J1" to "J7" timber trusses in hipset.	m	220		
		.02 External ceiling board including brandering.	m^2	260		
		.03 Internal ceiling board cut in neat sections including brandering and suspension system, including main and cross members, necessary hangers, grids, etc. hung from trusses	m^2	300		
		.04 Carefully remove ceiling suspension system galvanised mild steel hangers, hanger system, brandering/main and cross members, suspended from timber trusses and to be stored on site.	No	380		
		.02 Re-install:				
		.01 Truss rafters removed in hipsets	m	220		
		.02 Ceiling suspension system comprising galvanised mild steel hangers (minimum 2.0 mm thick × 25 mm wide), hanger system, brandering/main and cross members, and all necessary fixings, securely suspended from timber trusses.	No	380		
		.03 Allow a provisional sum for the removal, servicing, and reinstallation of all fresh air supply and extraction ducting, associated grills, and the existing Dunham Bush cassette AC unit at the CBC Building to facilitate roof truss works, including the removal and refitting of ducting, grills, and AC unit after inspection, resealing, adjustment, and securing of all duct runs, joints, insulation, and flex connections, and the commissioning of the AC system with full operational checks. COC certificates are to be required upon completion of all works Refer to drawing DWG_0546-04 for HVAC details.	SUM		-	
		Carried forward				

SCHEDULE NO 2: STRUCTURAL AND BUILDING RELATED REPAIR WORK: CENTRE FOR BIODIVERSITY CONSERVATION

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QUAN-TITY	RATE	AMOUNT
		Brought forward				
	203.00	**BUILDING WORK**				
BD.04		.01 Items measured by area:				
		.01 Install brickwork to close up openings at newly installed trusses	m^2	10		
		.02 Internal cement plaster to walls	m^2	10		
		.03 External cement plaster to walls	m^2	10		
BD.05		.02 Break out/hack up/demolish and remove:				
		.01 Break out and form openings through external brickwork for new timber trusses and members, make good plaster on both sides with 20MPa concrete thresholds with steel trowelled finish (paintwork specified elsewhere)	m^2	10		
	204.00	**BJ: PAINT WORK**				
BJ.02	**204.01**	**Paint to previously painted surfaces:**				
		.01 Plaster surfaces:				
		.01 Prepare and repair, brush to remove all loose contaminants, rinse and apply suitable bonding liquid one coat approved alkali resistant primer to bare substrate areas and two coats approved pure acrylic paint on existing painted surfaces:				
		.01 External walls	m^2	800		
		.02 Fibre cement surfaces:				
		.01 Prepare surfaces and remove all loose material, apply one coat plaster primer and two coats polyurethane enamel paint:				
		.01 External ceilings	m^2	260		
		.03 On plasterboard surfaces:				
		.01 Prepare surfaces and remove all loose material, apply two coats alkali resistant paint:				
		.01 Internal ceilings	m^2	300		
		Carried forward				

SCHEDULE NO 2: STRUCTURAL AND BUILDING RELATED REPAIR WORK: CENTRE FOR BIODIVERSITY CONSERVATION

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QUAN-TITY	RATE	AMOUNT
		Brought forward				
		.04 On steel surfaces:				
		.01 Prepare surfaces and remove all loose material, apply high gloss enamel paint.				
		.01 Steel section columns and beams.	m^2	450		
		.05 On timber surfaces:				
		.01 Prepare surfaces and remove all loose material sand down (as per manufacturers specification), apply three coats of Dulux Woodguard Rubol or equivalent superior quality matt/ clear gloss wood preservative on eaves members				
		.01 Timber eaves members.	m^2	25		
BC.02	**204.02**	**Waterproofing**				
		.01 On pitched sheeted roof:				
		.01 Pure acrylic emulsion waterproofing paint with polyester membrane or glass-fibre tissue waterproofing sealing system.	m^2	15		
	TOTAL SCHEDULE NO 2: CARRIED TO SUMMARY: REPAIR WORK					

SCHEDULE NO 3: STRUCTURAL AND BUILDING RELATED REPAIR WORK: KIRSTENBOSCH RESEARCH CENTRE

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QUAN-TITY	RATE	AMOUNT
		NOTE: BILL OF QUANTITIES TO BE READ IN CONJUCTION WITH DRAWINGS PROVIDED				
	300.00	**BC: WATERPROOFING BASEMENTS, ROOFS, BALCONIES, ETC.**				
		.01 4 mm Thick "Derbigum SP4" or similar approved waterproofing membrane including laps, turn-ups, turn-downs, etc and preparing and priming concrete including screeded surfaces laid in accordance with the manufacturer's instruction				
		.01 On flat roofs	m^2	40		
	301.00	**BUILDING WORK**				
BD.04		.01 Break out/hack up/demolish and remove:				
		.01 Core drill 80 mm diameter hole into parapet brick walls including pilot holes if necessary and scanning for services prior to core drilling	No.	3		
		.02 Remove and dispose of existing fullbore including fittings, hack and prepare surrounding concrete locally 30 mm deep × 30 mm wide to form square recess, clean and prepare surface for reinstatement.	No.	3		
		.03 Sheet waterproofing on flat roof including screed not exceeding 50 mm thick average and prepare surface for new screed	m^2	40		
		.02 Items measured by area:				
		.01 Internal cement plaster to walls	m^2	1		
BA.08	**301.01**	**Install existing rainwater goods:**				
		.01 Install uPVC items including all fixings, jointing, brackets, shoes, outlets, and connections to stormwater system.				
		.01 150 mm dia gutters.	m	25		
		.02 80 mm dia downpipe with offsets, shoes and brackets	m	30		
		.03 Extra over 90 mm elbow	No.	6		
BK.03	**301.02**	**Recast slab patch**				
		.01 Supply infill concrete to penetration and recess, including bonding agent to joint surfaces, finish flush with existing slab, and apply cementitious screed to match existing roof falls and levels.	No.	3		
	Carried forward					

SCHEDULE NO 3: STRUCTURAL AND BUILDING RELATED REPAIR WORK: KIRSTENBOSCH RESEARCH CENTRE

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QUAN-TITY	RATE	AMOUNT
		Brought forward				
BK.06	**301.03**	**Concrete Repairs**				
		.01 Crack Injection				
		.01 Preparation of cracks for crack injection to beams and slab.	m	3		
		.02 Crack injection with epoxy resin (Sikadur 52 or approved equivalent) to beams.	litre	2		
		.03 Site and core tests	Prov Sum			R 10 000.00
		.04 Charge required by Contractor on Item 03 above.	%	10 000		
		.02 External Bonding of Carbon Fibre Plates				
		.01 Preparation of concrete surfaces for plate bonding	m^2	1		
		.02 Adhesive: Sikadur - 30 (or equivalent to suit carbon fibre repair system)	m^2	1		
		.03 Plates: Sika CarboDur S512 (or equivalent carbon fibre repair system)	m	3		
		.04 Apply bonding agent (Sika Armatec - 110 Epocem or equivalent) to repaired beam soffit.	m^2	1		
		.03 Spall Repairs				
		.01 Preparation for and repair of spalled and damaged concrete using cementitious repair mortar:				
		.01 Sika Grout 212 (or equivalent)	litre	8		
		.02 Sika MonoTOP 615 HB (or equivalent)	litre	2		
BC.02	**301.04**	**Screed woodfloated on concrete.**				
		.01 Average 100 mm thick on floors with upper surface to falls and currents				
		.01 On flat roofs	m^2	40		
		Carried forward				

SCHEDULE NO 3: STRUCTURAL AND BUILDING RELATED REPAIR WORK: KIRSTENBOSCH RESEARCH CENTRE

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QUAN-TITY	RATE	AMOUNT
		Brought forward				
	302.00	**BJ: PAINT WORK**				
BJ.02	**302.01**	**Paint to previously painted surfaces:**				
		.01 Plaster surfaces:				
		.01 On plastered walls: Prepare and repair as specified, brush to remove all loose contaminants, rinse and apply suitable bonding liquid one coat approved alkali resistant primer to bare substrate areas and 2 coats interior quality emulsion paint with smooth sheen approval on existing surfaces:				
		.01 Internal walls	m^2	70		
		.02 On "Rhino" board surfaces:				
		.01 Prepare surfaces and remove all loose material, apply two coats alkali resistant paint:				
		.01 Internal ceilings	m^2	35		
		.03 On smooth concrete surfaces: Two coats interior quality PVA emulsion paint on work in bad condition:				
		.01 Internal ceilings	m^2	80		
		TOTAL SCHEDULE NO 3: CARRIED TO SUMMARY: REPAIR WORK				

SCHEDULE NO 4: STRUCTURAL AND BUILDING RELATED REPAIR WORK: HARRY MOLTENO LIBRARY

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QUAN-TITY	RATE	AMOUNT
		NOTE: BILL OF QUANTITIES TO BE READ IN CONJUCTION WITH DRAWINGS PROVIDED.				
	400.00	**STRUCTURAL AND BUILDING**				
	401.00	**CONCRETE AND MASONRY REPAIRS**				
BK06.02.04	**401.01**	**Application of waterproofing to concrete and masonry elements**				
		.01 Preparation for and application of waterproofing coating				
		.01 Site Modified Sika Cemflex or similar approved waterproofing agent to brick walls.	m^2	30		
BA.08	**402.00**	**RAINWATER DISPOSAL**				
	402.01	**uPVC or similar approved:**				
		.01 150 mm eaves gutters including all fittings	m	20		
		.02 80 mm dia downpipe including all fittings	m	2		
		.03 Extra over for shoe	No	1		
		.04 Clean existing eaves gutters	m	50		
BJ.02	**403.00**	**PAINTWORK**				
	403.01	**Paint to previously painted surfaces**				
		.01 Apply acrylic paint to interior walls of Harry Molteno Library, including crack bridging primer	m^2	30		
		.21 Apply acrylic paint to exterior walls of Harry Molteno Library.	m^2	30		
	404.00	**JOINTS**				
		.01 Expansion joints with 10 mm closed cell expanded polyethylene between concrete and brick surfaces	m	15		
	405.00	**JOINT SEALANT**				
		.01 Two-part grey polysulphide sealing compound, applied to joints complete with backing cord, bond breaker tape, primer and all ancillary materials necessary to form a durable, flexible, and watertight seal at all joints.	m	15		
	Carried forward					

SCHEDULE NO 4: STRUCTURAL AND BUILDING RELATED REPAIR WORK: HARRY MOLTENO LIBRARY

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QUAN-TITY	RATE	AMOUNT
	Brought forward					
BD.06	406.00	**PLASTERING**				
	406.01	**Repair of cracks in masonry walls**				
		.01 Crack width from 0.5 mm to 1.0 mm	m	20		
		.02 Crack width from 1.0 mm to 5.0 mm	m	10		
	406.03	**Remove plaster and replaster:**				
		.01 Brick walls (Internal)	m^2	20		
		.02 Brick walls (External)	m^2	20		
	407.00	**GLAZING**				
	407.01	**Sealing of windows**				
		.01 Seal windows in aluminium frames using silicone sealant	m	50		
	408.00	**REMOVAL OF EXISTING WORK**				
	408.01	**Breaking down and removing brickwork etc.**				
		.01 Various widths of brickwork for installation of 50 mm diameter weep hole pipe (measured elsewhere).	m^3	10		
	409.00	**MASONRY**				
BD.04		.01 Items measured by area:				
		.01 Install brickwork to close up openings.	m^2	4		
		.02 Drill holes into brick wall including pilot holes if necessary and scanning for services prior to drilling.				
		.01 Not exceeding 50 mm diameter through 270 mm cavity brick wall	No.	10		
		.03 50 mm Diameter HDPE pipe fixed through core drilled walls (300 mm long).	No.	10		
	TOTAL SCHEDULE 4: CARRIED FORWARD TO SUMMARY					

SCHEDULE NO 5: CIVIL AND STORMWATER RELATED WORK: HARRY MOLTENO LIBRARY

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QUAN-TITY	RATE	AMOUNT
	500.00	**CIVIL AND STORMWATER**				
SANS 1200 D	**501.00**	**BULK EXCAVATION, FILLING etc**				
	501.01	**Excavation in earth over sloping site**				
8.3.1		.01 Remove topsoil to a nominal depth of 150 mm, stockpile and maintain.	m^3	20		
8.3.2(a)		.02 Excavate in all materials, stockpile on site and backfill.	m^3	30		
		.03 Provisional sum for landscaping	Prov Sum			R 10 000.00
		.01 Charge required by Contractor on Item 03 above.	%	10 000		
8.3.2(b)	**501.02**	**Extra over bulk excavation in earth for excavation in:**				
		.01 Soft rock	m^3	2		
		.02 Hard rock	m^3	1		
8.3.2(c)	**501.03**	**Extra over all excavations for carting away**				
		.01 Surplus material from excavations and/or stock piles on site to a dumping site to be located by the contractor	m^3	20		
	502.00	**EXISTING SERVICES**				
8.3.8.1		01 Excavate by hand in soft material to expose / locate existing services	m^3	20		
		02 Provisional sum for repair of existing services, including leak detection	Prov Sum			R 25 000.00
		.01 Charge required by Contractor on Item 02 above.	%	25 000		
SANS 1200 DB	**503.00**	**EARTHWORKS (PIPE TRENCHES)**				
	503.01	**Excavate in all materials for trenches, backfill, compact and dispose of surplus / unsuitable material, for pipes:**				
		.01 UPVC Stormwater pipes exceeding 125 mm diameter but not more than 700 mm diameter on Class C Bedding				
		.01 Depth exceeding 0m but not more than 1 m	m^3	15		
		.02 Depth exceeding 1m but not more than 2 m	m^3	2		
SANS 1200MK	**504.00**	**KERBING AND CHANNELLING**				
8.2.1	**504.01**	**Concrete Kerbing (Precast)**				
		.01 BK2 Barrier Kerb	m	3		
	Carried forward					

SCHEDULE NO 5: CIVIL AND STORMWATER RELATED WORK: HARRY MOLTENO LIBRARY

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QUAN-TITY	RATE	AMOUNT
		Brought forward				
	504.02	**Concrete Kerbing and Channelling combined**				
		.01 Barrier Kerb (BK2) and Channelling (C2)	m	3		
SANS 1200 LB	**505.00**	**BEDDING**				
8.2.2	**505.01**	**Supply of Bedding by Importation:**				
8.2.2.3		.01 From commercial sources:				
		.01 Selected granular material (bedding) for stormwater pipes	m^3	10		
SANS 1200 LE	**506.00**	**STORMWATER DRAINAGE**				
8.2.8	**506.01**	**Supply and install Manholes, Catchpits, etc**				
		.01 Construct new brick manhole (900 mm x 900 mm x 900 mm deep) complete with ductile iron grid and frame (450 mm x 450 mm Type F by Saint Gobain or approved equivalent)	No	1		
		.02 Demolish and rebuild existing 900 mm x 900 mm manhole.	No	1		
		.03 Tie into existing manhole	No	2		
8.2.1	**506.02**	**Supply and lay UPVC pipe culverts**				
		.01 150 mm nominal diameter UPVC pipe on Class C bedding	m	10		
CB.02.01	**506.03**	**Cleaning of prefabricated culvert and inlet and outlet structures (average depth of material removed not more than 100 mm):**				
		.01 Prefabricated concrete pipes and portal culverts with maximum cross-sectional dimension of:				
		.01 Up to and including 500 mm	m	75		
		.02 501 mm to 750 mm	m	20		
CB.02.04	**506.04**	**Visual inspection of underground culvert network**	m	100		
CB.03.07	**506.05**	**Demolition and removal of damaged existing structures:**				
		.01 Plain concrete: Drainage channels	m	20		
SANS 1200 MJ	**507.00**	**SEGMENTED PAVING**				
8.2.2	**507.01**	**Construction of Paving complete**				
		.01 50 mm thick clay paver, bond shape pattern to match existing	m^2	5		
		TOTAL SCHEDULE 5: CARRIED FORWARD TO SUMMARY				

SCHEDULE NO 6: PLUMBING AND DRAINAGE RELATED WORK: KIRSTENBOSCH RESEARCH CENTRE AND CENTRE FOR BIODIVERSITY CONSERVATION

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QUAN-TITY	RATE	AMOUNT
		CENTRE FOR BIODIVERSITY CONSERVATION (CBC)				
PAA.06.03	**600.00**	**PLUMBING AND DRAINAGE**				
	601.00	**DETAIL WORK**				
	601.01	**Isolation, stripping, dismantling and removal of existing brassware, sanitaryware & piping:**				
		.01 15 mm Diameter pillar taps	No	2		
		.02 15 mm Diameter pipe connections to pillar taps	No	24		
		.03 15 mm - 42 mm Diameter copper pipes	m	6		
		.04 15 mm - 42 mm Diameter HDPE/PVC pipes	m	5		
PAA.06.05	**601.02**	**Supply and installation of sanitary ware and brassware to replace the following items with equal or similar approved fittings by licensed Plumber:**				
		.01 Isolating valve, wall mounted (replace existing with an equal or similar approved fitting)	No	24		
		.02 Hot and cold water taps (replace existing with an equal or similar approved fitting)	No	2		
		.03 Sealing around sanitary fixtures	m	10		
		.04 Flushmaster system				
		.01 Cobra toilet flush valve body only CP 20 mm FJ2-000 including cobra spare toilet flush pipe bent CP FJT1-1 with cobra flush junior pipe connector C-FJV1-7 7 or similar approved system to match existing bathroom systems	No.	7		
PAA.06.06	**602.00**	**EXCAVATIONS FOR DOMESTIC WATER SUPPLY:**				
		.01 Pipe trench excavations, bedding and backfilling:				
		.01 Excavate in all materials for pipe trenches to depth of 1100 mm x 600 mm wide	m^3	5		
		.02 Supply and installation of river sand pipe bedding	m^3	1		
		.03 Backfilling and compacting to 93 % modified AASHTO density with selected material	m	4		
	Carried forward					

SCHEDULE NO 6: PLUMBING AND DRAINAGE RELATED WORK: KIRSTENBOSCH RESEARCH CENTRE AND CENTRE FOR BIODIVERSITY CONSERVATION

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QUAN-TITY	RATE	AMOUNT
		Brought forward				
	603.00	**DOMESTIC WATER SUPPLY:**				
PAA.06.07	**603.01**	**Supply and installation of domestic water pipe installation by licensed Plumber:**				
		.01 Supply and install HDPE PE100 PN12 pressure pipe				
		.01 32 mm Diameter including fittings	m	100		
		.02 Allow for disconnecting of existing water line	Sum	1		
PAA.06.07	**603.02**	**Supply and installation of domestic water pipe installation by licensed Plumber:**				
PAA.03.03		.01 Copper pipe Class 2, SABS 460 with capillary soldered type joints for cold water piping installed on surface in service ducts, roofs, against walls and soffits and in voids inclusive of bracketing:				
		.01 15 mm Diameter including fittings	m	27		
		.02 22 mm Diameter including fittings	m	20		
		.03 28 mm Diameter including fittings	m	30		
	603.03	**Extra over copper pipes for solvent welded fittings:**				
		.01 15 mm Diameter fittings	No	5		
		.02 32 mm x 15 mm x 32 mm TEE	No	12		
		.03 15 mm Ball Valve	No	15		
		.04 22 mm Diameter fittings	No	2		
		.05 22 mm Ball Valve	No	3		
		.06 28 mm Diameter fittings	No	2		
		.07 28 mm Ball Valve	No	3		
		.08 32 mm Non-Return Valve	No	1		
		.09 32 mm Ball Valve	No	3		
		.10 32 mm In-Line Strainer	No	1		
		Carried forward				

SCHEDULE NO 6: PLUMBING AND DRAINAGE RELATED WORK: KIRSTENBOSCH RESEARCH CENTRE AND CENTRE FOR BIODIVERSITY CONSERVATION

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QUAN-TITY	RATE	AMOUNT
		Brought forward				
BE.06.02.03	**604.00**	**CONCRETE FILLING**				
		.01 15MPa / 19 mm unreinforced concrete:				
		.01 Infilling to cavity of hollow walls in pockets behind sanitary fittings	m^3	10		
SANS1200 DR		.02 Extra over all excavations for carting away				
		.01 Surplus material from excavations and/or stock piles on site to a dumping site to be located by the contractor	m^3	5		
	605.00	**TESTING**				
	605.01	**Testing newly installed water supply line by licensed specialist:**				
		.01 Allow for testing of new water line	Sum	1		R 10 000.00
		.01 Charge required by Contractor on Item 01.	%	10 000		
	606.00	**DEMOLITION WORK**				
	606.01	**Alterations to existing structures:**				
BD05		.01 Hack off and remove wall coverings				
		.01 Damaged ceramic wall tiles including grout, mortar, etc. and prepare to receive new.	m^2	26		
		.02 Hack off and remove damaged plaster on brick walls in patches and prepare to receive new	m^2	26		
BD05		.02 Suspended ceiling				
		.01 Take down, remove and store one side suspended ceiling panels for re-use	m^2	15		
		.02 Re-install stored suspended ceiling panels.	m^2	15		
BD05		.03 Breaking out for and forming plain openings through brick walls, including supporting brickwork above opening, making good cement plaster on both sides and into reveals with steel trowelled finish (making good paintwork elsewhere):				
		.01 Opening 1000 x 1000 mm high through half brick wall	m^2	24		
		.02 Opening 1000 x 1000 mm high through one brick wall	m^2	2		
		Carried forward				

SCHEDULE NO 6: PLUMBING AND DRAINAGE RELATED WORK: KIRSTENBOSCH RESEARCH CENTRE AND CENTRE FOR BIODIVERSITY CONSERVATION

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QUAN-TITY	RATE	AMOUNT
	Brought forward					
BD05		.04 Breaking down and removing brickwork and walling materials:				
		.01 Mass brickwork	m^3	3		
		.02 Half brick walls	m^2	3		
		.03 One brick walls	m^2	3		
BD05		.05 Core drill holes into half brick walls including pilot holes if necessary.				
		.01 30 mm Diameter	No	3		
		.02 50 mm Diameter	No	3		
		.06 Core drill holes into one brick skin including pilot holes if necessary.				
		.01 30 mm Diameter	No	3		
		.02 50 mm Diameter	No	6		
BD05	**607.00**	**MASONRY**				
	607.01	**Brickwork of NFP bricks in class II mortar:**				
		.01 Building of Brickwork in Class II mortar				
		.01 Half brick walls	m^2	24		
		.02 One brick walls	m^2	2		
BD05	**608.00**	**PLASTERING**				
	608.01	**Cement plaster on brickwork:**				
		.01 Internal cement plaster to walls	m^2	26		
		.02 Repair and seal:				
		.01 Crack (> 1 mm < 5 mm) in plastered wall	m	30		
	609.00	**TILING**				
	609.01	**Wall tiling and finishes:**				
BD05		.01 Allow a PC amount of R 300,00/m^2 for supply only of porcelain wall tiles fixed with adhesive to bedding (bedding elsewhere) and flush pointed with tinted waterproof jointing compound:				
		.01 On walls	m^2	26		
	Carried forward					

SCHEDULE NO 6: PLUMBING AND DRAINAGE RELATED WORK: KIRSTENBOSCH RESEARCH CENTRE AND CENTRE FOR BIODIVERSITY CONSERVATION

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QUAN-TITY	RATE	AMOUNT
	Brought forward					
BJ06.03	610.00	**PAINTWORK**				
	610.01	**Paint to previously painted surfaces:**				
		.01 On plastered walls: Prepare and repair as specified, brush to remove all loose contaminants, rinse and apply suitable bonding liquid one coat approved alkali resistant primer to bare substrate areas and 2 coats interior quality emulsion paint with smooth sheen approval on existing surfaces:				
		.01 Walls (internal)	m^2	250		
		.02 On smooth concrete: Two coats interior quality PVA emulsion paint on work in bad condition:				
		.01 On ceilings and beams including ceilings	m^2	67		
	611.00	**SCAFFOLDING**				
		.01 Supply, erect and dismantle independent type scaffolding 10 m length x 1.3 m width and 10 m high for 4 months to be used for the installation of the water supply pipework at the CBC Building.	Sum	1		
		KIRSTENBOSCH RESEARCH CENTRE (KRC)				
	610.00	**TESTING**				
	611.01	**Testing newly installed water supply line by licensed specialist:**				
		01 Allow for testing of new water line	Sum			R 10 000.00
		.01 Charge required by Contractor on Item 01.	%	10 000		
		TOTAL SCHEDULE 6: CARRIED FORWARD TO SUMMARY				

SCHEDULE NO 7: FIRE FIGHTING EQUIPMENT: KIRSTENBOSCH RESEARCH CENTRE AND CENTRE FOR BIODIVERSITY CONSERVATION

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QUAN-TITY	RATE	AMOUNT
		CENTRE FOR BIODIVERSITY CONSERVATION (CBC)				
	700.00	**WATER SUPPLY FOR FIRE RETICULATION**				
PAA.06.03	**701.00**	**DETAIL WORK**				
	701.01	**Isolation, stripping, dismantling and removal of existing fittings & piping:**				
		.01 22 mm - 42 mm Diameter copper pipes	m	25		
		.02 22 mm - 42 mm Diameter copper pipe fittings	No	40		
		.03 42 mm Diameter HDPE/PVC pipe fittings	m	6		
	702.00	**SUPPLY AND INSTALL**				
PAA.09	**702.01**	**Supply and installation of fire water reticulation pipework by licensed Plumber:**				
PAA.03.03		.01 Copper pipe Class 2, SABS 460 with capillary soldered type joints for cold water piping installed on surface in service ducts, roofs, against walls and soffits and in voids inclusive of bracketing:				
		.01 22 mm Diameter	m	35		
		.02 32 mm Diameter	m	40		
PAA.09	**702.02**	**Supply and installation of fire water reticulation pipework by licensed Plumber:**				
		.01 HDPE PE100 PN12 pressure pipe				
		.01 32 mm Diameter including fittings	m	50		
PAA.03.03	**702.03**	**Extra over class II copper pipes for solvent welded fittings:**				
		.01 22 mm Diameter Bend	No	30		
		.02 22 mm x 2 2mm Diameter Tee	No	14		
		.03 32 mm x 22 mm Reducer	No	4		
		.04 32 mm Diameter Bend	No	8		
		.05 3 2mm x 32 mm Diameter Tee	No	8		
	703.00	**TESTING**				
	703.01	**Testing newly installed pressure gauges by licensed specialist:**				
		.01 Allow for testing and calibrating pressure gauges	Sum	1		R 10 000.00
		.01 Charge required by Contractor on Item 01 above.	%	10 000		
	Carried forward					

SCHEDULE NO 7: FIRE FIGHTING EQUIPMENT: KIRSTENBOSCH RESEARCH CENTRE AND CENTRE FOR BIODIVERSITY CONSERVATION

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QUAN-TITY	RATE	AMOUNT
	Brought forward					
		KIRSTENBOSCH RESEARCH CENTRE (KRC)				
	704.00	**TESTING**				
	704.01	**Testing pressure gauges:**				
		.01 Allow for testing and calibrating Pressure Gauges	Sum	1		R 10 000.00
		.01 Charge required by Contractor on Item 01 above.	%	10 000		
	TOTAL SCHEDULE 7: CARRIED FORWARD TO SUMMARY					

TENDER NO: G567/2025
SOUTH AFRICAN NATIONAL BIODIVERSITY INSTITUTE

REQUEST FOR BIDS FOR THE APPOINTMENT OF A CONTRACTOR FOR THE REPAIRS TO THE EXISTING TIMBER ROOF TRUSSES AND WET SERVICES AT THE KIRSTENBOSCH CENTRE FOR BIODIVERSITY CONSERVATION BUILDING INCLUDING ASSOCIATED CIVIL AND BUILDING WORKS AT THE HARRY MOLTENO LIBRARY AT THE KIRSTENBOSCH NATIONAL BOTANICAL GARDEN: COMPLETION CONTRACT

SUMMARY OF SCHEDULE OF QUANTITIES: REPAIR WORK

SCHEDULE NO 1:	PRELIMINARY AND GENERAL	R .....
SCHEDULE NO 2:	STRUCTURAL AND BUILDING RELATED REPAIR WORK:	R .....
SCHEDULE NO 3:	STRUCTURAL AND BUILDING RELATED REPAIR WORK:	R .....
SCHEDULE NO 4:	STRUCTURAL AND BUILDING RELATED REPAIR WORK: HARRY MOLTENO LIBRARY	R .....
SCHEDULE NO 5:	CIVIL AND STORMWATER RELATED WORK: HARRY MOLTENO LIBRARY	R .....
SCHEDULE NO 6:	PLUMBING AND DRAINAGE RELATED WORK: KIRSTENBOSCH RESEARCH CENTRE AND CENTRE FOR BIODIVERSITY CONSERVATION	R .....
SCHEDULE NO 7:	FIRE FIGHTING EQUIPMENT: KIRSTENBOSCH	R .....
CONTINGENCY		R 150 000.00 .....

TOTAL OF SCHEDULE OF QUANTITIES - REPAIR WORK CARRIED TO CALCULATION OF TENDER SUM **R** .....

TENDER NO: G567/2025

SOUTH AFRICAN NATIONAL BIODIVERSITY INSTITUTE

REQUEST FOR BIDS FOR THE APPOINTMENT OF A CONTRACTOR FOR THE REPAIRS TO THE EXISTING TIMBER ROOF TRUSSES AND WET SERVICES AT THE KIRSTENBOSCH CENTRE FOR BIODIVERSITY CONSERVATION BUILDING INCLUDING ASSOCIATED CIVIL AND BUILDING WORKS AT THE HARRY MOLTENO LIBRARY AT THE KIRSTENBOSCH NATIONAL BOTANICAL GARDEN: COMPLETION CONTRACT

CALCULATION OF TENDER SUM

TOTAL OF SCHEDULE OF QUANTITIES - REPAIR WORK	R	.....
SUBTOTAL	**R**	
VALUE-ADDED TAX (VAT) The tenderer shall add 15% of the subtotal for value-added tax	R	.....
TENDER SUM CARRIED TO FORM OF OFFER AND ACCEPTANCE	**R**	.....

PART C: THE CONTRACT

Part C3: Scope of Work

PROJECT TITLE:	**REQUEST FOR BIDS FOR THE APPOINTMENT OF A CONTRACTOR FOR THE REPAIRS TO THE EXISTING TIMBER ROOF TRUSSES AND WET SERVICES AT THE KIRSTENBOSCH CENTRE FOR BIODIVERSITY CONSERVATION BUILDING INCLUDING ASSOCIATED CIVIL AND BUILDING WORKS AT THE HARRY MOLTENO LIBRARY AT THE KIRSTENBOSCH NATIONAL BOTANICAL GARDEN: COMPLETION CONTRACT**
CONTRACT NO:	**SANBI G567/2025**

PART C: THE CONTRACT
Part C3: Scope of Work

PROJECT TITLE:	**REQUEST FOR BIDS FOR THE APPOINTMENT OF A CONTRACTOR FOR THE REPAIRS TO THE EXISTING TIMBER ROOF TRUSSES AND WET SERVICES AT THE KIRSTENBOSCH CENTRE FOR BIODIVERSITY CONSERVATION BUILDING INCLUDING ASSOCIATED CIVIL AND BUILDING WORKS AT THE HARRY MOLTENO LIBRARY AT THE KIRSTENBOSCH NATIONAL BOTANICAL GARDEN: COMPLETION CONTRACT**
CONTRACT NO:	**SANBI G567/2025**

C3.1. Description of the Works

C3.1.1 Employer's Objectives

The employer's objective is to upgrade and rehabilitate the infrastructure at the Kirstenbosch National Botanical Garden, specifically within the Centre for Biodiversity Conservation, Harry Molteno Library and Kirstenbosch Research Centre.

C3.1.2 Overview of the Works

Centre for Biodiversity Conservation Building

Roof Structure

At the Centre for Biodiversity Conservation building, the roof structures were originally designed to accommodate a tiled roof covering. The covering was altered, and a new metal sheeted roof system was installed. This change has had significant structural implications, as the new roof covering introduced a reversal of stresses within the trusses, causing members to pull away from the building and their supports.

This resulting loading condition places emphasis on the fixing methodology used to secure the roof. The roofing assessment carried out has shown that the current fixing method applied to roof members and connections is non-compliant and requires correction. Additionally, some truss members have failed and will need to be replaced, while other members will require strengthening through the application of plying or scabbing with supplementary timber sections. The roof bracing is also inconsistent across different areas of the structure and must be corrected to restore overall stability and compliance.

Wet services

Wet services will be upgraded under the supervision of a certified plumber, including installation, connection, testing, and commissioning of all new and rehabilitated water supply pipework to ensure compliance with SANS standards.

Fire Reticulation Works

Fire reticulation works include the supply and installation of new pipework, valves and fittings, followed by flushing, pressure testing, submission of compliance and commissioning of the new system.

Harry Molteno Library

The civil works required include the repair and reconstruction of an existing manhole, along with the installation of new kerbing and steps to prevent stormwater inflow around the building. Leak detection and remedial works to existing services are also required, as the building has shown signs of settlement and cracking, likely due to water ingress and retention behind the existing retaining walls. Additional works include trenching, bedding, pipe laying, and cleaning of existing culverts to improve stormwater drainage and protect the building's foundations, ensuring long-term structural stability.

Kirstenbosch Research Centre

Waterproofing

At the Kirstenbosch Research Centre, works include the removal of existing waterproofing and sealing of the full-bore roof outlet, preparation of roof surfaces, installation of new waterproofing membranes, and supply and installation of rainwater goods, and outlets, with all penetrations tested and sealed. Internal walls, exposed soffits of the roof slab and rhino board ceilings below will be prepared and repainted.

Concrete Repairs

Localised spalling at the soffit of the first-floor slab and other reinforced concrete elements will be repaired by removing defective concrete, treating exposed reinforcement, and reinstating with approved structural repair mortar.

Wet services

Wet services will include testing, and commissioning of all existing water supply pipework to ensure compliance with SANS standards.

Fire Reticulation Works

Fire reticulation works include inspection, followed by flushing, pressure testing, commissioning, and submission of compliance.

C3.1.3 Extent of the Works

The Contractor will be required to construct the works in conformity with design criteria specified in the project's scope of work, part C3 of the tender document. The scope of works includes but is not limited to the following:

Centre for Biodiversity Conservation Building

Roof Structure

The contractor or their subcontractor shall be responsible for the full structural roof design of the Centre for Biodiversity Conservation Building. All trusses must be designed to accommodate retrofitted solar panels and existing ducting. Design, fabrication, and installation must comply with manufacturer specifications, SANS standards, and ITC guidelines. The final truss design shall be reviewed and monitored on site by a registered ITC-certified professional. The contractor's pricing must include all costs associated with the design, chosen construction methodology, and its implementation.

Key activities include:

- Removal and reinstallation of roof sheeting and rainwater goods.
- Removal, supply, and installation of timber roof trusses.
- Design, supply and fabrication of new replica trusses.
- Strengthening existing trusses by plying or scabbing additional timber members to form multi-ply trusses.
- Installation or reinstatement of ceilings, insulation, and suspension systems.
- Alterations and repairs to existing structures, including brickwork and plastering where required.
- Painting and protective coatings for timber, steel, plaster, and ceilings.
- Supply and installation of sundry items such as flashings, brackets, fasteners, and bracing.

Wet Services

All water supply works shall be carried out or supervised by a certified plumber to ensure compliance with SANS standards and industry best practice. The contractor shall be responsible for the safe installation, testing, and commissioning of all water supply systems.

Key activities to include:

- Locating and isolating existing valves and connecting new water supply pipework.
- Installing domestic copper and HDPE pipes with all necessary fittings, valves, and connections to WHBs, WCs, and urinals.
- Core drilling walls at designated locations to route pipework through openings.
- Restoring surfaces affected by installation, including re-plastering, painting, and re-tiling where required.
- Disconnecting existing water supply lines and testing and commissioning the new system.
- Providing, erecting, and dismantling scaffolding in coordination with roof truss works.

Fire Reticulation Services

All fire reticulation works shall be carried out or supervised by a certified fire protection contractor in compliance with SANS 10400 Part T, SANS 10287, and relevant standards. The contractor shall inspect, test, and commission the existing fire system and install new reticulation pipework and fittings as required to ensure full operational performance.
Activities to include:

- Testing and verification of the existing fire reticulation network.
- Supply, installation, and connection of new pipework, valves, and fittings.
- Flushing, pressure testing, and commissioning of the complete system.
- Submission of compliance and test certificates.
- Reinstatement of all affected finishes and surfaces.

Harry Molteno Library

Works at the Harry Molteno Library is to include the following civil and building related works:

Excavation & Earthworks

- Remove topsoil, excavate all materials (including soft/hard rock), backfill, dispose surplus, and allow for landscaping.

Existing Services

- Locate services by hand and carry out repairs including leak detection.

Pipe Trenches

- Excavate, backfill, compact, dispose of unsuitable material, and install UPVC stormwater pipes on Class C bedding.

Kerbing & Channelling

- Install precast barrier kerbs and combined kerb & channelling.

Stormwater Drainage

- Construct, demolish, or tie into manholes; lay UPVC culverts; clean and inspect culverts; remove damaged structures.

Segmented Paving

- Install 50 mm clay pavers in existing bond pattern.

Kirstenbosch Research Centre

Works at the Kirstenbosch Research Centre is to include the following civil, building and fire related works:

Roofing and Paint Work

- Removal of existing waterproofing and sealing of the full-bore outlet on the flat roof.
- Preparation and cleaning of roof surfaces prior to new waterproofing installation.
- Installation of new waterproofing membranes and associated detailing.
- Supply and installation of new rainwater goods, flashings, and outlets.
- Testing of waterproofing and ensuring all roof penetrations are fully sealed.
- Preparation and repainting of previously painted internal walls and ceilings to match existing finishes.

Concrete Repairs

- Chipping away loose or defective concrete to expose sound substrate.
- Cleaning and preparation of exposed reinforcement and application of corrosion protection.
- Application of approved structural repair mortar and finishing to match existing surfaces.
- Curing and inspection of repaired areas prior to painting or finishing.

Wet Services

All water supply works shall be carried out or supervised by a certified plumber to ensure compliance with SANS standards and industry best practice. The contractor shall be responsible for the testing, and commissioning of all water supply systems.

Fire Reticulation Services

All fire reticulation works shall be carried out or supervised by a certified fire protection contractor in compliance with SANS 10400 Part T, SANS 10287, and relevant standards. The contractor shall inspect, test, and commission the existing fire system.

Activities to include:

- Testing and verification of the existing fire reticulation network.
- Flushing, pressure testing, and commissioning of the complete system.

- Submission of compliance and test certificates.

Project Period

The project period will be **4 months (Excl. the Builders Holiday).**

C3.1.4 Location of the Works

The site is located at the Kirstenbosch National Botanical Garden (KNBG), Rhodes Drive, Newlands, Cape Town and includes all nursery structures.

C3.1.5 Description of Site and Access

Kirstenbosch National Botanical Garden lies in the heart of the Cape Floristic Region, also known as the Cape Floral Kingdom. It is the first botanic garden in the world to be included within a natural World Heritage Site.

The 36-hectare garden is part of a 528-hectare estate that contains protected mountainside supporting natural forest and fynbos along with a variety of animals and birds. The Kirstenbosch Estate borders the Table Mountain National Park, and the Garden merges with the natural fynbos and forest of the mountain.

Kirstenbosch displays a wide variety of the unique plant life of the Cape Flora. Plants from all the diverse regions and biomes of southern Africa are also grown at Kirstenbosch, with over 7 000 species in cultivation.

The garden is accessible via Rhodes Drive, Newlands.

C3.1.6 Temporary Works

All design and construction of any temporary works must be approved by the Principal Agent.

PART C: THE CONTRACT
Part C3: Scope of Work

PROJECT TITLE:	**REQUEST FOR BIDS FOR THE APPOINTMENT OF A CONTRACTOR FOR THE REPAIRS TO THE EXISTING TIMBER ROOF TRUSSES AND WET SERVICES AT THE KIRSTENBOSCH CENTRE FOR BIODIVERSITY CONSERVATION BUILDING INCLUDING ASSOCIATED CIVIL AND BUILDING WORKS AT THE HARRY MOLTENO LIBRARY AT THE KIRSTENBOSCH NATIONAL BOTANICAL GARDEN: COMPLETION CONTRACT**
CONTRACT NO:	**SANBI G567/2025**

C3.2. Construction

C3.2.1 Construction Standards

The "Model Preambles for Trades (2008 Edition)" recommended and published by the Association of South African Quantity Surveyors shall be deemed to be incorporated in the Bills of Quantities, with amendments as follows: References to "Architect" in the Model Preambles are to be read as "Principal Agent" shall apply to this contact.

This publication is available from The Association of South African Quantity Surveyors, P.O. Box 3527, Halfway House, 1685 - telephone (011) 315-4140, before a Tender is submitted.

The SANS 1200 Standardised Specification for Civil Engineering Construction prepared by Standards South Africa and specific amendments and additions to the SANS 1200 Standardized Specifications shall apply to this contract.

The SANS 1200 Standardised Specification publications are available from Standard south Africa, Private Bag X 191, Pretoria, 0001.

C3.2.2 Plant and Materials

C3.2.2.1 Plant and Materials Supplied by the Employer

None

C3.2.2.2 Materials, Samples and Shop Drawings

All materials are to be tested by a commercial laboratory as directed by the Engineer.

C3.2.3 Construction Equipment

C3.2.3.1 Requirements for Equipment

The Contractor is required to use plant and equipment that is sufficient for the contract.

C3.2.3.2 Equipment Provided by the Employer

None

C3.2.4 Existing Services

C3.2.4.1 Known Services

As-built information is unavailable at the time of tender, the onus still lies with the main Contractor to ensure that no services are damaged during the construction phase.

C3.2.4.2 Treatment of Existing Services

Contractor to use caution.

C3.2.4.3 Use of Detection Equipment for the Location of Underground Services

At main Contractor's discretion.

C3.2.4.4 Damage to Services

It is the responsibility of the Contractor to ensure that no services are damaged during the construction process. In case the known services are damaged, the main Contractor shall be responsible for the repair off the services to the original state before it was damaged, as well as all cost associated with the damaged service.

C3.2.5 Site Establishment

C3.2.5.1 Services and Facilities Provided by the Employer

None.

C3.2.5.2 Facilities Provided by the Contractor

The onus lies with the main Contractor to find a suitable camp site, approved by the Employer.

C3.2.5.3 Storage

No requirements are specified.

C3.2.5.4 Other Facilities and Services

No requirements are specified.

C3.2.5.5 Vehicles and Equipment

No requirements are specified.

C3.2.5.6 Advertising Rights

It is the main Contractor's responsibility that no suppliers advertise on site. Any advertisement from suppliers shall be removed at the cost of the main Contractor.

C3.2.5.7 Notice Boards

Not Applicable.

C3.2.6 Site Usage

The Contractors are not allowed to work outside the allowed working hours, as agreed with the Engineer. The disturbance to the residence should be kept at a minimum.

PART C: THE CONTRACT
Part C3: Scope of Work

PROJECT TITLE:	**REQUEST FOR BIDS FOR THE APPOINTMENT OF A CONTRACTOR FOR THE REPAIRS TO THE EXISTING TIMBER ROOF TRUSSES AND WET SERVICES AT THE KIRSTENBOSCH CENTRE FOR BIODIVERSITY CONSERVATION BUILDING INCLUDING ASSOCIATED CIVIL AND BUILDING WORKS AT THE HARRY MOLTENO LIBRARY AT THE KIRSTENBOSCH NATIONAL BOTANICAL GARDEN: COMPLETION CONTRACT**
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C3.3. Management

C3.3.1 Planning and Programming

C3.3.1.1 General

This clause describes the requirements for the preparation, submission, updating and revision of the programme for the works. The requirements are in addition to or in expansion of the JBCC PBA clause [15.6].

The programme shall be used by the contractor to plan and execute the works. The programme shall also be used by the Principal Agent to monitor progress and be the sole basis for the assessment of revisions of the date for Practical Completion.

The programme shall be produced by the contractor as follows:

a) A programme for the totality of the works shall be submitted to the principal agent for acceptance. If the principal does not accept such programme, it shall be revised and amended until it is accepted by the principal agent. This programme will then be regarded as the baseline programme.

b) This baseline programme shall be updated with actual progress on a monthly basis, or any more frequent basis as necessitated by construction events. The contractor may submit to the principal for acceptance revisions to the baseline programme.

c) Acceptance by the Principal Agent of any programme submitted by the contractor does not make such programme a contract document, nor does it mandate that the works shall be constructed strictly in accordance therewith. The contractor at all times remains responsible for the construction of the works.

C3.3.1.2 Submission of Programme

Within 10 (ten) working days of been given possession of the site the Contractor shall submit to the Principal Agent for his review and acceptance a programme for the whole of the works showing the order in which the contractor proposes to execute the works. This programme becomes the baseline programme upon acceptance by the Principal Agent. The baseline programme shall have regard to the contract completion dates, any other milestones and any restraints set out in the contract. Thereafter, if the actual progress does not conform with the baseline programme, the Principal Agent is entitled to require the Contractor to submit a revised programme showing the order of activities necessary to ensure completion of the works by the contract completion dates.

The Contractor shall supply the Principal Agent with an electronic copy of each programme, together with a print-out bar chart or tabular report in a pre-agreed format. All programmes shall be prepared and submitted using Microsoft Project software.

Within 10 (ten) working days of the contractor submitting a programme complete with all the information required by this clause to the principal agent for acceptance, the principal agent will accept the programme or state reasons for not accepting the programme. If such reasons are given, the contractor shall take account of the reasons and resubmit the programme within 5 (five) working days.

If the Principal Agent fails to act the programme is deemed to be rejected.

C3.3.1.3 Default in submission of programs

Should the contractor fail to submit a programme for acceptance as the baseline programme or not update the programme as described above, the principal agent shall be entitled to withhold 25% of the amount due to the contractor in interim payment certificates until the contractor has complied with its obligations in this regard.

C3.3.2 Health and Safety

C3.3.2.1 Health and Safety specification

In terms of the Occupational Health and Safety Act (Act 85 of 1993) (OHSA) and the Construction Regulation 2014, the Client must provide the Contractor with a Health and Safety Specification to which the Contractor must respond with a Health and Safety Plan for approval by the Client.

The purpose of this Specification is to ensure that Principal Contractors entering into a contract with the Employer maintain an acceptable level of performance with regard to health and safety issues during the performance of the contract. In this regard the OHSA Specification form an integral part of the Contract and the Principal Contractor shall ensure that their contractors and/or suppliers comply with the requirements of this Specification.

PART C: THE CONTRACT
Part C4: Site Information

PROJECT TITLE:	**REQUEST FOR BIDS FOR THE APPOINTMENT OF A CONTRACTOR FOR THE REPAIRS TO THE EXISTING TIMBER ROOF TRUSSES AND WET SERVICES AT THE KIRSTENBOSCH CENTRE FOR BIODIVERSITY CONSERVATION BUILDING INCLUDING ASSOCIATED CIVIL AND BUILDING WORKS AT THE HARRY MOLTENO LIBRARY AT THE KIRSTENBOSCH NATIONAL BOTANICAL GARDEN: COMPLETION CONTRACT**
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PART C: THE CONTRACT
Part C4: Site Information

PROJECT TITLE:	**REQUEST FOR BIDS FOR THE APPOINTMENT OF A CONTRACTOR FOR THE REPAIRS TO THE EXISTING TIMBER ROOF TRUSSES AND WET SERVICES AT THE KIRSTENBOSCH CENTRE FOR BIODIVERSITY CONSERVATION BUILDING INCLUDING ASSOCIATED CIVIL AND BUILDING WORKS AT THE HARRY MOLTENO LIBRARY AT THE KIRSTENBOSCH NATIONAL BOTANICAL GARDEN: COMPLETION CONTRACT**
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C4.1 Site Information

C4.1.1 Site Location

The site is located at the Kirstenbosch National Botanical Garden, Rhodes Drive, Newlands, Cape Town.

Figure 1: Location of the Centre for Biodiversity Conservation Building and the Harry Molteno Library.

C4.1.2 Weather Information

The weather measurements to be recorded for each calendar month are:

- The cumulative rainfall (mm)
- The number of days with rainfall more than 10 mm

If any one of these weather measurements recorded within a calendar month, before the Completion Date for the whole of the works and at the place stated in this Contract Data is shown to be more than the amount sated below, then the contractor may notify the consultant of and inclement weather claim.

Month	Number of days with rain more than 10 mm
January	2
February	3
March	3
April	5
May	9
June	11
July	10
August	10
September	8
October	5
November	4
December	4

ANNEXURE A: SPECIFICATIONS

PARTICULAR SPECIFICATION

PAA PLUMBING AND DRAINAGE INSTALLATION

CONTENTS

PAA 01 SCOPE

(a) This specification covers the particulars of the maintenance work to the plumbing and drainage installations at SANBI. This particular specification shall be read in conjunction with the Technical Specification AA: Plumbing and Drainage Installation, and all additional and technical specifications compiled as part of this document, in particular the following Additional Specifications:

SA:	General Maintenance
SB:	Operating and Maintenance Manuals
SC:	General Decommissioning, Testing and Commissioning Procedures
SD:	General Training

The intended maintenance work to this installation will restore the existing installation to a safe, efficiently functional system that complies with all statutory regulations and applicable standards, in the process repairing all defects and shortfalls. Monthly maintenance responsibilities for each installation shall commence with access to the site. The Contractor shall be responsible to take over the completed installation which shall be maintained and serviced by the Contractor for the duration of the 60-month Contract period. Additional repair work will also form part of the Maintenance work in the Contract.

The various sites consist of various facilities, as listed below, which form part of the maintenance and servicing contract for plumbing and drainage installation.

PAA 01.02 OCCUPATIONAL HEALTH AND SAFETY

The Contractor shall be required to comply with the Occupational Health and Safety Act 85 of 1993, Construction Regulations 2014 and related regulations. Non- compliance with these regulations, in any way whatsoever, will be adequate reason for suspending the Works.

PAA 01.01 GENERAL PLUMBING AND DRAINAGE INFORMATION

All the buildings are connected to water meters.

PAA 02 GENERAL DESCRIPTION OF INSTALLATIONS

The existing plumbing and drainage installations provide potable hot and cold water to the various buildings on these sites. The potable cold-water installation is provided with supply points from the underground reticulation networks outside the buildings to an above ground reticulation network via service ducts, ceiling voids and chased into walls to outlet points. The potable hot-water installation is provided with supplies from various domestic or industrial geysers where applicable.

This contract also provides for repair and maintenance of the fire water piped reticulation network, excluding the fire fighting equipment which is dealt with under Particular Specification PJC: Conventional Fire Fighting equipment.

Technical details of sanitary and brassware, as well as the plumbing and drainage installations are given in PAA 03.

PAA 03 TECHNICAL DETAILS OF EXISTING INSTALLATIONS

At the time of compilation of this document the existing installations consisted of the equipment and plant listed below with their relevant technical details.

PAA 03.01 SANITARY AND BRASSWARE: GENERAL

	SANITARY WARE	BRASSWARE	TRAP
WCs (cistern)	Armitage Shanks/Vaal: white, floor-mounted, vitreous china	Brass shut-off valves	Not applicable
Cistern (WC)	Wall-mounted, white, CI; Wall-mounted, white, vitreous china; Wall-mounted, white, plastic	Brass shut-off valves	Not applicable
Urinals (flush)	Armitage Shanks, white, wall-mounted, vitreous china; Citimetal stainless steel wall-mounted.	Junior flush valve, exposed type, shut-off valves; Brass shut-off valves	CP bottle trap. Flexi P- trap; Flexi S- trap
WHBs	Armitage Shanks, white wall-mounted, white enamel; Wall-mounted stainless steel	Cobra 15 mm, CP star handle pillar taps, mixer taps	Flexi P-trap; Flexi S-trap
Showers		15 mm CP under-tile stop-cocks, mixers	
Wash troughs	Stainless steel, double bowl, wall-mounted	Cobra 15 mm, CP star handle wall type taps	Flexi P-trap
Baths	Steel enamel, white, 2 m long and acrylic	Cobra 20 mm, CP star handle wall type taps	Not applicable
Sinks	Stainless steel, cabinet-	20 mm CP star	Flexi P-trap,

	SANITARY WARE	BRASSWARE	TRAP
	mounted	handle taps, 20 mm Cobra taps CP sink mixer with over arm swivel outlet	lead P-trap
Wash tubs	Concrete double bowl	CP wall type taps	Lead P-trap

PAA 03.02 SANITARY DRAINAGE PIPING: GENERAL

	PIPE	FITTINGS	EQUIPMENT
Gullies	VCP	CI or plastic grating	Not applicable
Waste pipes	GMS, uPVC	Brass, uPVC	Not applicable
Soil pipes	S&S CI, uPVC	S&S CI, uPVC	Not applicable
Cleaning eyes	CI (ABC), uPVC	Not applicable	Not applicable
Vent pipes	S&S CI	S&S CI	Not applicable

PAA 03.03 DOMESTIC WATER PIPING: GENERAL

	PIPE	FITTINGS	EQUIPMENT
Cold-water piping	Cu GMS	Conex, soldered GMS	Brass gate shut-off valve Brass gate shut-off valve
Hot-water piping	Cu GMS	Conex, soldered GMS	Brass gate shut-off valve Brass gate shut-off valve

PAA 03.04 FIRE WATER PIPING: GENERAL

	PIPE	FITTINGS	EQUIPMENT
Fire water piping	GMS, Cu	GMS, Conex soldered	See specifications

PAA 03.06 FIRE WATER INSTALLATION QUANTITIES

The firefighting equipment currently installed is listed in Particular Specification PJC: Conventional Fire Fighting Equipment. The piped reticulation networks to these equipment items shall form part of this contract where applicable.

PAA 04 STATUS OF EXISTING INSTALLATION

The status of the equipment and installation at the time of compilation of this document is summarised below:

PAA 04.01 SANITARY AND BRASSWARE

The Scope of Works requires full Maintenance from the inception of the Contract on all facilities, buildings, installations, infrastructure and equipment regardless of any other repair related works that may occur during the Contract Period.

PAA 04.02 PLUMBING AND DRAINAGE INSTALLATION

The Scope of Works requires full Maintenance from the inception of the Contract on all facilities, buildings, installations, infrastructure and equipment regardless of any other repair related works that may occur during the Contract Period.

PAA 05 DETAILS OF REPAIR WORK

The following work shall form part of the repair work to Building Services. This work shall be done in accordance with the relevant regulations, codes, specifications and Technical Specification AA: Plumbing and Drainage Installations, as set out in this document. The work to be included is set out in PAA 05.01 and PAA 05.02 below and shall be read in conjunction with the Schedule of Quantities and Technical Specifications.

The repair work shall be carried out in accordance with the requirements of Additional Specification SC: General Decommissioning, Testing and Commissioning Procedures.

PAA 05.01 GENERAL DESCRIPTION OF WORK

The Contractor shall inspect the items, systems, equipment, components and installations listed below. This inspection shall involve the determination of any defects, leaks, damages, shortfalls, structural soundness, repairs required, details of existing equipment, suitability of equipment for the purpose it serves, etc. The Contractor shall report back to the Engineer in writing on all the above and the following items. No repair work shall commence prior to approval by the Engineer:

(a) Sanitary and brassware, including traps, brackets, piping, pan connectors, etc;

(b) Sanitary drainage installation, including fittings, traps, floor drains, gullies, cleaning eyes, manholes, grease and oil separators, etc;

(c) Domestic water piped installation, including fittings, valves, strainers, lagging and cladding, non-return valves, safety valves, etc;

(d) Fire water piped installation, including fittings, valves, non-return valves, pressure gauges, etc;

(e) Bracketing system;

(f) Domestic geysers including valves, pressure reducing valves, strainers, vacuum breakers, safety valves, non-return valves, lagging and cladding, etc.

(g) Industrial geysers including valves, pressure reducing valves, strainers, vacuum breakers, safety valves, non-return valves, lagging and cladding, etc.

The general scope of work at the time of going on tender is defined as follows:

(a) Replacing of irreparably damaged, missing and unsuitable sanitary and brassware, including the isolation, removal and stripping of the existing equipment;

(b) Replacing of irreparably damaged, corroded and unsuitable sanitary drainage piping, including fittings, brackets, traps, floor drains, oil and grease separators, cleaning eyes and gullies, etc;

(c) Replacing of irreparably damaged, corroded and unsuitable domestic water piping, including fittings, brackets, valves, strainers, water meters, lagging and cladding, etc;

(d) Replacing of irreparably damaged, corroded and unsuitable fire water piping, including fittings, brackets, valves, non-return valves, pressure gauges, etc;

(e) Replacing of irreparably damaged and corroded domestic or industrial geysers, including valves, pressure-reducing valves, air release valves, strainers, non-return valves, vacuum breakers and safety valves;

(f) Servicing, cleaning and repair of existing sanitary ware including removal of stains, repair of chipped enamel, replacing of damaged and missing seats and lids, de-scaling and cleaning of cisterns and servicing of filling and flushing mechanisms, fixing of loose fixtures and brackets, cleaning of traps, etc;

(g) Servicing, overhauling and cleaning of existing brassware, including dismantling, de-scaling, repair kits, replacing of washers, gland packing and gaskets, replacing of missing tap handles and flushing assemblies, etc;

(h) Servicing, cleaning and repair of existing domestic water and drainage pipe installations, including traps, floor drains, gullies, manholes, valve chambers, grease and oil separators, brackets, valves, vacuum breakers, strainers, pipe lagging and cladding, etc;

(i) Servicing and repair of existing fire water piped reticulation, including fittings, valves, pressure gauges, brackets, etc;

(j) Servicing, cleaning and repair of domestic geysers, including de-scaling, testing for leaks, replacing of elements, safety valves and thermostats if required, etc;

(k) Handing over of complete systems on completion of the repair work to the satisfaction of the Engineer, when the maintenance period shall commence;

(l) The supply and compilation of operating and maintenance manuals;

(m) The testing, adjusting and commissioning of all systems;

(n) The introduction of a maintenance control plan, including logging, recording and control procedures.

PAA 05.02 PLUMBING AND DRAINAGE INSTALLATION

The work to this installation shall at least include, but not be limited to the work listed below. Any items, components or installations not detailed in particular but found to be defective or inoperative during the inspection and report phase, shall be repaired or replaced as instructed by the Engineer.

PAA 05.02.01 Various Sites

(i) Service and repair domestic hot and cold-water installations, including pressure testing of existing systems, and replace items that are beyond repair. Where necessary, replace entire system with capillary soldered copper pipe system.

(ii) Service and repair drainage system, including rodding of system, and replace damaged or leaking pipes and fittings, manhole covers, cleaning and inspection eyes, gullies and gully gratings.

(iii) Service and repair brassware, such as taps, stop-cocks and flushing mechanisms with repair kits, and replace items that are missing or beyond repair.

(iv) Service and repair sanitary ware, including chip repair, de-staining and re-coating of baths, WC bowls and wash hand basins, dent removal and de-staining of wash troughs and kitchen sinks and replacement of damaged or missing parts such as WC seats and lids and cistern lids. Replace missing or

irreparably damaged equipment.

The following replacement items shall be installed where required:

(1) Ceramic and Plastic cisterns
(2) Steel enamel bathtubs
(3) Stainless steel wash troughs
(4) Ceramic wash hand basins

(v) Service and repair domestic geysers, including de-scaling, testing for leaks, replacement of electrical heating elements if required, servicing or replacement of valves, or replace leaking and corroded geysers where necessary.

PAA 06 MEASUREMENT AND PAYMENT

All new building work and repair work to existing structures and buildings necessitated by repairs to the plumbing and drainage services as scheduled, shall be done in accordance with the structural and building section of the Technical and Particular Specifications. The costs of such building and repair works shall be deemed to be included in the tendered rates for the applicable items as scheduled in this section.

PAA.01 INSPECTION AND REPORT ON EXISTING INSTALLATIONS ..... Unit: installation

The unit of measurement shall be the installation reported on.

The tendered rate for the installation shall include full compensation for the inspection and written report on all items, systems, components, equipment and installations, including the establishment of defects, leaks, damage, shortfalls, structural soundness, repairs required, details of existing equipment and suitability of the equipment for the purpose it serves.

PAA.03 ISOLATION, STRIPPING, DISMANTLING AND REMOVAL OF EXISTING BRASSWARE, SANITARY WARE AND PIPING INSTALLATIONS ..... Unit: number, metre

The unit of measurement shall be the number of each item of brassware and sanitary ware and metre of piping removed, including fixtures and fittings.

The tendered rates shall include full compensation for the isolation, dismantling and removal of irreparably damaged, broken and/or unsuitable brassware (flush valves, taps, mixers, shower roses, under tile stop-cocks, demand bib taps, hose bib taps, shut-off valves, etc) and sanitary ware (water closets, cisterns, basins, urinals, baths, wash troughs, sinks, etc) including all associated pipe work, brackets, traps, pan connectors, etc.

The tendered rates shall also include full compensation for the isolation, stripping, dismantling and removal of irreparably damaged, broken or unsuitable pipe work installed on surface, underground, chased into walls, in ceiling voids and/or service ducts, as well as the plugging off of connections to this pipe work.

The tendered rate shall also include full compensation for the removal off site and/or to storage of all removed items as mentioned above.

PAA.04 ISOLATION, STRIPPING, DISMANTLING AND REMOVAL OF EXISTING GEYSER INSTALLATIONS ..... Unit: number

The unit of measurement shall be the number of each geyser installation removed, including associated pipe work and fittings.

The tendered rates shall include full compensation for the isolation, stripping, dismantling and removal of irreparably damaged, broken and/or corroded domestic geysers, including shut-off valves, non-return valves, strainers, pressure-reducing valves, vacuum breakers, air release valves, safety valves, etc, and the removal off site.

PAA.05 SUPPLY AND INSTALLATION OF SANITARY WARE AND BRASSWARE ..... Unit: metre, number

The unit of measurement shall be the number of each item of sanitary and brassware supplied and installed, including all associated pipe work and fittings.

The tendered rate shall include full compensation for the supply, delivery, positioning, installation, testing, cleaning, commissioning and hand-over of sanitary and brassware including all necessary pipe work, traps, brackets, fittings, bends, junctions, cleaning eyes, etc, to connect the sanitary and brassware to the existing water supply and/or drainage installation.

The tendered rate shall also include full compensation for chasing and/or building into walls and the reinstating of existing surfaces such as floors, walls, ceilings, etc.

PAA.06 SUPPLY AND INSTALLATION OF DRAINAGE PIPING INSTALLATION ..... Unit: metre

The unit of measurement shall be the metre of each type of piping in the installation supplied and installed, including all fixtures and fittings.

The tendered rates shall include full compensation for the supply, delivery, installation, testing, cleaning, commissioning and handover of new drainage piping, installed on surface against walls or soffits, underground, in ceiling voids, chased or built into walls and/or service ducts, including all necessary bends, junctions, tees, cleaning eyes, covers, traps, floor drains, gratings, brackets, hangers, etc, to hand over a complete and effective installation that complies with local government regulations.

The tendered rates shall also include full compensation for the necessary underground works such as excavation, pipe bedding, fill blanket, backfilling and compaction and for the reinstatement of existing surfaces such as floors, walls, ceiling, roads, paving, etc, as well as connection to the existing drainage installation.

PAA.07 SUPPLY AND INSTALLATION OF DOMESTIC WATER PIPING INSTALLATION ..... Unit: metre

The unit of measurement shall be the metre of each type of piping in the installation supplied and installed, indicating all fixtures and fittings.

The tendered rates shall include full compensation for the supply, delivery, installation, testing, cleaning, sterilising, commissioning and hand-over of new water piping installed on surface against walls or soffits, underground, in ceiling voids, chased or built into walls and/or in service ducts, including all necessary bends, tees, reducers, elbows, valves, strainers, adapters, brackets, hangers, etc, to hand over a complete and effective installation that complies with local government regulations.

The tendered rates shall also include full compensation for the supply and installation of hot-water pipe insulation and cladding.

The tendered rates shall also include full compensation for the necessary underground works such as excavation, pipe bedding, fill blanket, backfilling and compaction and for the reinstatement of existing surfaces such as floors, walls, ceilings, roads, paving, etc, as well as connection to the existing domestic water installation.

PAA.08 SUPPLY AND INSTALLATION OF DOMESTIC

GEYSER INSTALLATION ..... Unit: number

The unit of measurement shall be the number of each geyser installation supplied and installed, including all associated pipe work and fittings.

The tendered rates shall include full compensation for the supply and installation of domestic geysers, including shut-off valves, non-return valves, strainers, pressure- reducing valves, vacuum breakers, air release valves, safety valves, etc, as well as connection to existing piping and electrical supply.

PAA.09 SUPPLY AND INSTALLATION OF FIRE WATER RETICULATION PIPEWORK ..... Unit: metre

The unit of measurement shall be the metre of each type of pipe work supplied and installed in the firewater reticulation, including all fixtures and fittings.

The tendered rate shall include full compensation for the supply, delivery, installation, testing, cleaning, commissioning and hand-over of new fire water reticulation pipe work installed on surface against walls or soffits and/or underground, including all necessary bends, tees, reducers, elbows, valves, adapters, brackets, hangers, pressure gauges, etc, to hand over a complete and effective installation that complies with local government regulations.

The tendered rates shall also include full compensation for the necessary underground work such as excavation, pipe bedding, fill blanket, backfilling and compaction and for the reinstatement of existing surfaces such as floors, walls, ceilings, roads, paving, etc, as well as connection to the existing fire water reticulation network.

PAA.10 SERVICING, CLEANING AND REPAIR OF SANITARY WARE ..... Unit: number

The unit of measurement shall be the number of each item of sanitary ware serviced, cleaned and repaired, including all associated pipe work and fittings.

The tendered rate shall include full compensation for the repair or replacement of all damaged or missing parts, servicing of all movable parts, cleaning of stained sanitary ware with approved cleaning agent, fixing of loose fixtures and brackets according to manufacturer's specifications, de-scaling and cleaning of cisterns and servicing of filling and flushing mechanisms, cleaning of all traps, fixing or replacing of damaged or missing shower, urinal and channel outlet gratings and any other work or action required to hand over an effective system that complies with local government regulations.

PAA.11 SERVICING, OVERHAULING AND CLEANING OF BRASSWARE ..... Unit: number

The unit of measurement shall be the number of each item of brassware serviced, overhauled or cleaned, including all associated pipe work and fittings.

The tendered rate shall include full compensation for dismantling, cleaning and de- scaling, replacement of all gaskets, gland packing and seals on all valves, repair or replacement of all damaged or missing parts, replacement kits for worn or leaking flush valves, taps and mixers, repair or replacement of leaking, corroded or damaged flush pipes, readjusting of timing mechanisms on flush valves and metering taps and any other work or action required to hand over an effective system that complies with local government regulations.

PAA.12 SERVICING, CLEANING AND REPAIR OF DOMESTIC WATER AND DRAINAGE PIPE INSTALLATIONS.....Unit: number, metre, item

The unit of measurement shall be the metre of each type of pipe installation serviced, cleaned and repaired, including all fixtures and fittings.

The tendered rates shall include full compensation for inspection, sampling testing, servicing, cleaning and repair of existing piping and equipment such as:

(a) Video surveying of all underground drainage pipe work to establish root ingress, damaged and corroded pipe work, fat build-up, blockages, incorrect falls, sagging and to provide as-built information;

(b) Initial unblocking and cleaning of all drainage pipe work, traps, floor drains and gullies;

(c) Pressure testing of piping and taking of water piping samples to determine state of corrosion and scaling;

(d) Repair work to damaged manholes, gullies, cleaning eyes, valve chambers, etc, including builders' work and benching;

(e) Repair of existing bracketing systems including fixing and repair of existing brackets and hangers, as well as the supply and installation of additional brackets where required;

(f) Emptying, cleaning, checking, testing and repair of oil and grease separators;

(g) Service and repair to all valves, strainers, pressure-reducing valves, water meters, non-return valves, air release valves and vacuum breakers, including new gaskets, gland packing and seals;

(h) Taking of water samples and bacteriological testing to determine the compliance with the relevant codes of practice;

(i) Repairing and/or replacement of damaged hot-water pipe lagging and cladding;

(j) Preparation, painting and repainting of pipe work and;

(k) Any other work or action to hand over an effective installation that complies with local government regulations.

PAA.13 SERVICING, CLEANING AND REPAIR OF DOMESTIC GEYSERS.....Unit: number

The unit of measurement shall be the number of domestic geysers serviced, cleaned and repaired, including all fixtures and fittings.

The tendered rate shall include full compensation for the isolation, servicing, cleaning and repair of domestic geysers in accordance with the manufacturer’s specifications, including de-scaling, testing for leaks, replacing of elements, replacement of safety valve and replacement of thermostat and set point, and replacement of connections if required and any other work or action to hand over an effective system that complies with local government regulations.

PAA.14 SERVICING AND REPAIR OF FIRE WATER PIPED RETICULATION NETWORKS.....Unit: metre

The unit of measurement shall be the metre of each type of piping in the firewater network serviced and repaired, including all fixtures and fittings.
The tendered rates shall include full compensation for the inspection, testing, servicing and repair of existing piping and equipment such as:

(a) Pressure testing of piping and taking of pipe samples to determine the extent of corrosion and scaling;

(b) Repair or replacement of damaged, leaking, broken and corroded pipe work or fittings;

(c) Repair and service to all valves, including new gaskets, gland packing and seals;

(d) Repair, service, adjustment and calibration of all pressure gauges;

(e) Repair and fixing of existing brackets and hangers and the installation of additional brackets and hangers where required;

(f) Any other work or action to hand over an effective system that complies with local government regulations.

PAA.15 CLEANING OUT SEPTIC TANKS AND DISPOSE OF CONTENTS OFF-SITE ..... Unit: number

The unit of measurement shall be the number of septic tanks thoroughly cleaned and pumping the waste into a tanker and disposing of all the waste off site at a wastewater dumping area.

PAA.16 SUPPLY AND INSTALLATION OF DOMESTIC GEYSER INSTALLATION ..... Unit: number

The unit of measurement shall be the number of each geyser installation supplied and installed, including all associated pipe work and fittings.

The tendered rates shall include full compensation for the supply and installation of industrial geyser installations including isolating lever-ball valves (from 22 to 50mm), 400kPa expansion relief valve, drain connection, overflow pipe, inline circulating pump (25mm), Temperature and pressure safety valve, electrical control panel, bulk hot water vessel, pump supply cable, dual thermostat, hot water outlet, y-strainer, pressure gauge, non-return valve, temperature gauge, balanced cold water and expansion valve stand pipe.

PAA.17 SERVICING, CLEANING AND REPAIR OF INDUSTRIAL GEYSERS ..... Unit: number

The unit of measurement shall be the number of industrial geysers serviced, cleaned and repaired, including all fixtures and fittings.

The tendered rate shall include full compensation for the isolation, servicing, cleaning and repair of industrial geysers in accordance with the manufacturer's specifications, including de-scaling, testing for leaks, servicing, checking or replacing of isolating lever-ball valves (from 22 to 50mm), 400kPa expansion relief valve, drain connection, overflow pipe, inline circulating pump (25mm), Temperature and pressure safety valve, electrical control panel, dual thermostat, y-strainer, pressure gauge, non-return valve, temperature gauge, and any other work or action to hand over an effective system that complies with local government regulations.

PAA.18 RE-INSTALLATION OF EXISTING GEYSER INSTALLATIONS AT LOCATION INDICATED BY ENGINEER ..... Unit: number

The unit of measurement shall be the number of each geyser re-installed including associated pipe work and fittings.

The tendered rates shall include full compensation for the re-installation of the isolated domestic geysers, including servicing, cleaning and repair of domestic geysers in

accordance with the manufacturer's specifications scaling, testing for leaks, replacing of elements, and replacement of thermostat and set point, replacement of two shut-off valves, non-return valve, strainer, two vacuum breakers, safety valve and replacement pipe work not exceeding 10m from the previous location according to SANS specifications and any other work or action to hand over an effective system that complies with local government regulations.

PAA.19 SUPPLY AND INSTALLATION OF DOMESTIC GALVANISED GEYSER DRIP TRAY.....Unit: number

The unit of measurement shall be the number of each geyser drip tray installation supplied and installed, including isolation and re-installation of geyser.

The tendered rates shall include full compensation for the supply and installation of the geyser drip trays including isolation of geyser and re-installation of geyser on drip tray.

PAA.20 SUPPLY AND INSTALLATION OF SOLAR POWERED GEYSER INSTALLATION ..... Unit: number

The unit of measurement shall be the number of each solar powered geyser installation supplied and installed, including all associated pipe work and fittings.

The tendered rates shall include full compensation for the supply and installation of solar powered geysers which shall include all solar storage tanks and solar collector panels, including shut-off valves, non-return valves, strainers, pressure-reducing valves, vacuum breakers, air release valves, safety valves, etc, as well as connection to existing piping, electrical, lagging & cladding supply.

PAA.21 SUPPLY AND INSTALLATION OF DOMESTIC HEAT PUMP INSTALLATION ..... Unit: number

The unit of measurement shall be the number of each heat pump installation supplied and installed, including all associated pipe work and fittings.

The tendered rates shall include full compensation for the supply and installation of a heat pump installation which shall include the heat pump, circulating pump set, shut- off valves, non-return valves, strainers, pressure-reducing valves, vacuum breakers, air release valves, safety valves, etc., as well as connection to existing piping and electrical connection.(storage tank measured separately)

PAA 07 DETAILS OF MAINTENANCE WORK

PAA 07.01 GENERAL

The Contractor shall be responsible for the complete maintenance of all the equipment, components, installations and systems forming part of this repair and maintenance contract and as set out in PAA 03.05. The Contractor shall strictly adhere to Additional Specification SA: General Maintenance, and Technical Specification AA: Plumbing and Drainage Installations, with regard to the maintenance period, obligations, responsibilities, actions and activities, etc, which shall also include the following maintenance actions:

(a) Routine preventative maintenance. A guideline to the required actions is provided in specification AA. The actions will not be limited to these guidelines,

but shall include all additional actions, work, materials, etc. necessary to maintain this installation at an acceptable level.

(b) Corrective maintenance as described and defined in Additional Specification SA: General Maintenance.

(c) Breakdown maintenance as described and defined in Additional Specification SA: General Maintenance.

Fatal breakdown shall be defined as any equipment, components and systems preventing the supply of water to fire hydrants and fire hoses due to a failure of this system at the particular point of incident.

Emergency breakdown shall be defined as any equipment, components and systems preventing the provision of water and the drainage of the equipment to the consumer points due to a failure of part of this system at the particular point of incident.

TECHNICAL SPECIFICATION

BA ROOF COVERINGS

CONTENTS

BA 01 SCOPE

This specification covers the removal of existing roof coverings and waterproofing and the supply, delivery and installation of new roof coverings and water-proofing to various types of buildings.

Roof coverings shall mean the scope of work related to the removal of existing roof coverings, water-proofing and ancillary items, the supply and installation of new roof sheeting, roofing screws, purlins, flashings, rainwater goods, water-proofing, fascias and barge boards. This specification also includes minor work related to trusses, purlins, paintwork, minor plumbing work and water-proofing to concrete roofs.

BA 02 STANDARD SPECIFICATIONS

BA 02.01 GENERAL STANDARD SPECIFICATIONS

The latest edition, including all amendments to date of tender, of the following specifications, publications and codes of practice shall be read in conjunction with this specification and shall be deemed to form part thereof:

SANS 1200HB	-	Cladding and Sheeting
SANS 1783-4	-	Softwood brandering and battens
SANS 935	-	Hot-dip (galvanised) zinc coatings
SANS 1273	-	Fasteners for sheet roof and wall coverings

BA 02.02 Occupational Health and Safety

The Contractor shall be required to comply with the Occupational Health and Safety Act 85 of 1993, Construction Regulations 2014 and related regulations. Non-compliance with these regulations, in any way whatsoever, will be adequate reason for suspending the Works.

BA 02.2 ADDITIONAL SPECIFICATIONS

Technical Specification BB: Carpentry and Joinery for Roofs and Ceilings Technical Specification
BC: Waterproofing of Concrete Roofs

BA 02.3 ADDITIONAL REQUIREMENTS FOR REPAIR OF PROFILED ROOF SHEETING (NON-CONCEALED FIXING AND CONCEALED FIXING)

BA 02.3.1 Roof sheeting

Existing roof sheeting shall either be replaced or to a small extent be repaired according to the Schedule of Quantities and as instructed by the Engineer. Where new sheeting is

specified, the existing roof sheeting must be removed. Each day's removed sheeting shall be fully covered with new roof sheeting at the end of the day. Plastic sheeting or equivalent approved protection to minimize damage possibilities due to rain, etc and to protect the personnel and occupied buildings. The new roof sheeting shall be 0, 6 mm thick galvanised baked silicone polyester enamel paint (baked enamel) Kliplok or equivalent approved for roof slopes exceeding 15º. Concealed fixed type Galvanised baked enamel roof sheeting will in general be used to cover roofs with slopes not exceeding 15º. The sheeting must be laid in long lengths without end overlaps. The broad flutes must be turned up at the apex to form a dam, and turned down at the eaves to form a drip. Metal closers 0,8 mm thick galvanised (baked enamel), complete with polyclosers set in one run of silicone sealant, are required at apexes, ridges, side and head walls, etc. The Contractor shall take all necessary dimensions and measurements on site prior to manufacturing and installation. Z275 galvanising spelter shall be used and the Contractor shall provide SANS certificates of compliance to the Engineer. Various standard dark colours will be used for baked enamel finished roof sheeting, flashings, gutters and down pipes. In all cases the roofing must be laid strictly in accordance with the manufacturer's specifications.

In certain cases, existing roof sheeting that is removed from buildings, will be re-used to repair similar types of structures.

BA 02.3.2 Main fasteners to timber purlins: Galvanised/baked enamel Kliplok or equivalent approved sheeting

90 mm x no. 14 hexagon head (H/H) carbon steel (C/S) cadmium plated Posidriv or equivalent approved roofing screws with 29 mm diameter x 1,0 mm thick galvanised conical washers and poly-isobutyl grommet assembly must be used. Main fasteners for steel purlins are to be 65 mm long. Fasteners to be provided at alternating ribs and all side laps.

BA 02.3.3 Side lap fasteners: Galvanised/baked enamel Kliplok or equivalent approved sheeting

Stitching will be done with 25 mm x no. 14 H/H C/S posidriv or equivalent approved roofing screws @ 600 c/c maximum with 29 mm diameter x 1,0 mm thick galvanised conical washers and poly-isobutyl grommet assembly. Provide 10 x 1, 6 mm thick butyl rubber sealer strip between sheets.

BA 02.3.4 Flashings

0, 8 mm thick baked enamel/galvanised flashings at ridge caps, side and head walls, drips, corners, etc, as described elsewhere. The minimum length of an overlap between flashings is 150 mm. Apply two runs of silicone sealant between flashings. Flashings to be stitched together with 25 mm x no. 14 H/H C/S posidriv or equivalent approved roofing screws with 29 mm diameter x 1, 0 mm thick galvanised conical washers at end laps and longitudinally @ 400 c/c maximum at ribs, etc. The Contractor shall take all necessary dimensions and measurements on site prior to manufacturing and installation.

BA 02.3.5 Sealant

Silicone sealant with an amine cure system with primer shall be used to waterproof all flashings and rainwater goods, viz. gutters and down pipes. Two runs of silicone shall be provided at end overlaps.

BA 02.3.6 Pipe flashings

EPDM/silicone pipe-through-roof flashings to diameter or equivalent approved pipe flashings shall be used to waterproof pipe protrusions through the roof sheeting. Installation shall be done strictly in accordance with the manufacturer's specification and shall include the application of EPDM/silicone pipe through roof flashing and sealant and fastening of flashing to surface with TEKS or equivalent approved self-drilling fasteners.

BA 02.3.7 Insulation

No insulation repairs are required. In certain cases insulation may be necessary to reduce heat load or to comply with hygiene requirements as in abattoirs.

Specification for non-visible roof insulation material:

Heavy grammage double sided reflective aluminium foil (heavy grade) laid on 1,6 mm diameter galvanised straining wires at 300 mm centres to the manufacturer's specification. The insulation shall be laid longitudinally over the purlins and lapped 150 mm at joints.

Specification for visible roof insulation material:

White thermal insulation low density polyethylene bubble and Aluminium foil backing fire retardant grade laid on 1,6 mm diameter white plastic (PVC) coated straining wires at 383 mm centres to the manufacturer's specification. The insulation shall be laid longitudinally over the purlins and lapped at joints.

BA 02.4 ADDITIONAL REQUIREMENTS FOR REPAIR OF PROFILED SIDE WALL CLADDING (NON-CONCEALED FIXING AND CONCEALED FIXING)

BA 02.4.1 Side wall cladding

Existing side wall cladding shall either be repaired or replaced in accordance with the Schedule of Quantities. Where new cladding is specified, the existing side wall cladding must be removed. Each day's removed cladding shall be fully covered with new cladding at the end of the day. The new side wall cladding shall be 0,6 mm thick galvanised (or baked enamel) IBR or equivalent approved. The cladding must be laid in long lengths without end overlaps. Metal closers 0,8 mm thick galvanised (or baked enamel), complete with polyclosers set in one run of silicone sealant, are required at gables, ridges, side and head walls, etc. The Contractor shall take all necessary dimensions and measurements on site prior to manufacturing and installation. Z275 galvanising spelter shall be used and the Contractor shall provide SANS certificates of compliance to the Engineer. Heavy duty profiled polycarbonate sheets shall be used for translucent sheeting. Various standard dark colours for baked enamel finished side wall cladding, flashings, gutters and down pipes will be used. In all cases the cladding must be laid strictly in accordance with the manufacturer's specifications.

BA 02.4.2 Main fasteners to timber girts: Galvanised/Galvanised baked enamel Kliplok (or equivalent approved) and profiled translucent sheeting

90 mm x no. 14 hexagon head (H/H) carbon steel (C/S) cadmium plated posidriv or equivalent approved roofing screws with 29 mm diameter x 1,0 mm thick galvanised conical washers and poly-isobutyl grommet assembly must be used. Main fasteners for steel girts are to be 65 mm long. Fasteners to be provided at alternating ribs.

BA 02.4.3 Side lap fasteners: Galvanised/Galvanised baked enamel Kliplok (or equivalent approved) sheeting

Stitching will be done with 25 mm x no. 14 H/H C/S posidriv or equivalent approved roofing screws @ 600 c/c with 29 mm diameter x 1,0 mm thick galvanised conical washers and poly-isobutyl grommet assembly. Provide 10 x 1,6 mm butyl rubber sealer strip between sheets.

BA 02.4.4 End overlaps

If unavoidable, the end overlap shall be 300 mm minimum between sheeting and sealed with two rows of silicone sealant between the sheets. Bolt the ribs in the overlap region with the profiled (polycarbonate) translucent sheeting with galvanised no. 14 gutter bolts, bonded washers and nuts through every alternative rib.

BA 02.4.5 Side overlaps: Vertical profiled translucent sheeting

Stitching will be done with 6 mm cadmium-plated cladding bolts and nuts x 25 mm long @
± 300 c/c with 19 mm diameter x 1,0 mm thick galvanised conical washers and poly- isobutyl grommet assembly.

BA 02.5 RAINWATER GOODS

BA 02.5.1 Gutters

Standard size for houses:
100 x 75 x 0,8 thick standard baked enamel/galvanised non-supporting beaded gutter. Galvanised brackets to be provided at every truss. Brackets to be painted to specification in the Schedule of Quantities.
Alternatively standard 140 x 127 x 83 x 0,6 mm thick concealed fix profile sheeting baked enamel/galvanised fascia gutter with galvanised gutter clips can be used.

Typical size for other buildings:
125 x 100 x 0,8 thick standard baked enamel self-supporting beaded gutter. Dark colours to

Consultant's specification.

The Contractor shall take all necessary dimensions and measurements on site prior to manufacturing and installation.

BA 02.5.2 Joints in gutters, valleys, etc

150 mm overlap sealed with an approved silicone and riveted together with 2 rows of sealed pop rivets. Linings to valleys and secret gutters, etc, shall have an overlap of 225 mm.

BA 02.5.3 Gutter accessories and ancillary items

End stops: 0,8 mm thick baked enamel/galvanised finished end stops joined to gutter on site and sealed as for joints in gutters.

Outlets: 0,8 mm thick baked enamel/galvanised finished outlets fixed to gutter with pop rivets and sealed with an approved silicone. Outlet to slip into down pipe.

Fascia straps: 25 mm wide x 1,0 mm thick galvanised straps at +/- 686 mm c/c.

Corner joints: Corner joints to be neatly mitred, pop riveted together and sealed with an approved silicone.

Sealant: Clear silicone sealant with amine cured system and primer shall be used to waterproof gutters and down pipes.

BA 02.5.4 Down pipes

Standard sizes:
100 x 75 x 0, 6 thick baked enamel/galvanised down pipes 100 x 100 x 0,8 thick baked enamel/galvanised down pipes

Dark colours to Consultant's specifications.

Down pipes to have double-seamed joints. Down pipes, shoes, offsets, etc, shall be joined together by means of 100 mm slip joints and pop riveted together.

The Contractor shall take all necessary dimensions and measurements on site prior to manufacturing and installation.

BA 02.5.5 Down pipe acessories

Brackets: Standard galvanised brackets shall be spaced at centres not exceeding 2,4 metres.

Brackets to be primed and painted with 2 coats of high gloss enamel.

Shoes, offsets and spreaders: Manufactured from 0,8 mm thick baked enamel/galvanised material, cut and mitred to suit. All joints to be sealed with an approved silicone sealant.

BA.02.5.6 General

The Contractor will be responsible for the stability of the supporting structure during and after removal of existing roof cladding and sheeting.

SANS 1200 HB "Cladding and Sheeting" will be applicable for the erection of all new roofs.

The Contractor must give a minimum 3 year guarantee for the watertight roof and workmanship. **The manufacturer must carry out inspections at regular intervals during the construction period. He must issue a certificate of acceptance and compliance on completion to the client.**

BA 03 MEASUREMENT AND PAYMENT

BA.03.1 DETAILS OF MATERIAL TO BE USED

For detail descriptions of materials, thicknesses, dimensions and ancillary items to be used, as specified in the various payment items of roof sheeting, cladding, flashings, etc; refer to the scheduled list below:

Flashings: Refer to Technical Specifications BA	
Roof:	
0,8 mm thick Galvanised baked enamel Ridge Flashing	462 mm girth (231 + 231), 3 x bends (2 are shallow bends). Fix flashing to roof sheeting with posidriv screws and washers. 150 mm overlap sealed with 2 rows of pop rivets and 2 rows of silicone; 2 rows of broad flute polyclosers bedded in silicone, 2 rows x 0,6 mm thick Galvanised baked enamel broad flute metal closers. Bend up trough to form a dam.
0,6 mm thick Galvanised baked enamel Eaves Closer	Fix standard serrated narrow flute eaves closer to timber purlin. Patch plaster and touch up paint work.
0,8 mm thick Galvanised Apex Trim	462 mm girth (231 + 231 vertical), 3 x bends (2 are shallow bends). Fix flashing to roof sheeting with posidriv screws and washers. 150 mm overlap fixed and sealed with 2 rows of pop rivets and 2 rows of silicone. 1 row of broad flute polycloser bedded in silicone, 2 rows x 0,6 mm thick galvanised broad flute metal closers. Bend up trough to form a dam.
0,8 mm thick Galvanised baked enamel Headwall Flashing	385 mm girth (231 + 154 vertical) headwall flashing, 2 x bends (1 is a shallow bend). Fix flashing to roof sheeting with posidriv screws and washers. 150 mm overlap fixed and sealed with 2 rows of pop rivets and 2 rows of silicone. 1 row of broad flute polycloser bedded in silicone, 1 row x 0,6 mm thick Galvanised baked enamel broad flute metal closer. Bend up trough to form a dam. 154 mm girth (114 + 25 + 15 lip @ 15º) Galvanised baked enamel counter flashing, 3 x bends (1 is a shallow bend). Counter flashing to overlap with headwall flashing with at least 75 mm. Cut 6 mm wide groove into brick wall for counter flashing. Prime joint and seal with an approved 6 x 6 mm poly-urethane sealant.
Extra over for cutting into brick wall	6 mm wide groove x 30 mm deep into brick wall. Clean groove from dust and prime groove.
0,8 mm thick Galvanised baked enamel Hip Flashing	462 mm girth (231 + 231), 3 x bends (2 are shallow bends). Fix flashing to roof sheeting with posidriv screws and washers. 150 mm overlap sealed with 2 rows of pop rivets and 2 rows of silicone. 2 rows of broad flute polyclosers bedded in silicone, 2 rows x 0,6 mm thick Galvanised baked enamel broad flute metal closers on rake. Bend up trough to form a dam.
0,8 mm thick Galvanised baked enamel Apron Flashing	462* mm girth (308 + 154* vertical, girt position determines final upstand length on site), 3 x bends (2 are shallow bends). Fix flashing to roof sheeting with posidriv screws and washers. 150 mm overlap sealed with 2 rows of pop rivets and 2 rows of silicone. 2 rows of broad flute polyclosers bedded in silicone, 1 row x 0,6 mm thick Galvanised baked enamel broad flute metal closer. Bend up trough to form a dam.
0,8 mm thick Galvanised baked enamel Eaves Flashing	462* mm girth (154 vertical + 308*, girt position determines final upstand length), 3 x bends (2 are shallow bends). Fix flashing to roof sheeting with posidriv screws and washers. 150 mm overlap sealed with 2 rows of pop rivets and 2 rows of silicone. 1 row each of broad and narrow flute polyclosers bedded in silicone, 1 row each x 0,6 mm thick Galvanised baked enamel broad and narrow flute metal closers. Turn down trough to form a drip. Overhang length of roof sheeting to be determined on site.
0,8 mm thick Galvanised baked enamel Gable Flashing	308 mm girth (262 + 46 vertical), 3 x bends (2 are shallow bends). Fix flashing to roof sheeting with posidriv screws and washers. 150 mm overlap sealed with 2 rows of pop rivets and 2 rows of silicone. Flashing to be fitted tightly over gable fascia board. Provide one row

(residential type)	of continuous silicone on rib.
0,8 mm thick Galvanised baked enamel Gable Flashing (industrial type)	462 mm girth (262 +200 vertical), 3 x bends (2 are shallow bends). Fix flashing to roof sheeting with posidriv screws and washers. 150 mm overlap sealed with 2 rows of pop rivets and 2 rows of silicone. 1 row x 0,6 mm thick Galvanised baked enamel broad flute metal closer on side wall cladding. Provide one row of continuous silicone on rib.
0,8 mm thick Galvanised baked enamel Side Wall Flashing	385 mm girth (231 + 154 vertical) side wall flashing, 2 x bends (1 is a shallow bend). Fix flashing to roof sheeting with posidriv screws and washers. 150 mm overlap fixed and sealed with 2 rows of pop rivets and 2 rows of silicone. 1 row of broad flute polycloser bedded in silicone (only for vertical side wall cladding). 154 mm girth (114 + 25 + 15 lip @ 15º) Galvanised baked enamel counter flashing, 3 x bends (1 is a shallow bend). Counter flashing (side wall is a brick wall) to overlap with side wall flashing with at least 75 mm. Cut 6 mm wide groove into brick wall parallel to roof sheeting for counter flashing. Prime joint and seal with an approved 6 x 6 mm poly-urethane sealant.
0,8 mm thick Galvanized Roof Overhang Barge Flashing	616 mm girth (286 + 300 vertical + 20 + 10 vertical) standard Craft-Lock barge flashing, 4 x bends (1 is a shallow bend). Fix flashing to roof sheeting with posidriv screws and washers, and to 250 x 25 wide x 2,5 thick with 25 mm lip galvanised bracket. The galvanised bracket to be screwed to rafter ends with 2 countersunk brass screws. 150 mm overlap fixed and sealed with 2 rows of pop rivets and 2 rows of silicone. 1 row of broad flute polycloser bedded in silicone, 1 row x Galvanised baked enamel broad flute metal closer bedded in a row of silicone. Bend up trough to form a dam.
0,8 mm thick Galvanised baked enamel Side Roof Overhang Flashing (carports)	616 mm girth (286 + 300 vertical + 20 + 10 vertical), 4 x bends (1 is a shallow bend). Fix flashing to roof sheeting with posidriv screws and washers, and to 250 x 25 wide x 2,5 thick with 25 mm lip galvanised bracket. The galvanised bracket to be screwed to timber rafter ends with 2 countersunk brass screws or to be site welded to steel purlins. 150 mm overlap fixed and sealed with 2 rows of pop rivets and 2 rows of silicone.
0,8 mm thick Galvanised Valley Flashing	770 mm girth (308 + 27 vertical + 100 wide gutter + 27 vertical + 308), 6 x bends (2 x shallow bends). Fix valley gutter to top of valley rafters with posidriv screws and washers (seal with silicone). Cut and bend valley gutter at main gutter with 25 mm down lip. 225 mm overlap fixed and sealed with 2 rows of pop rivets and 2 rows of silicone. 2 rows of narrow flute polyclosers in ribs bedded in silicone.
0,8 mm thick Galvanised Valley Side Wall Flashing	616 mm girth (308 + 27 vertical + 140 wide gutter + 141 vertical), 4 x bends (1 is a shallow bend). Fix valley gutter to top of valley rafter with Posidriv screws and washers (seal with silicone) and impact nails (6 mm dia x 60 long @ 200 c/c) to brick wall. Cut and bend valley gutter at main gutter with 25 mm down lip. 225 mm overlap fixed and sealed with 2 rows of pop rivets and 2 rows of silicone. 1 row of narrow flute polyclosers in ribs bedded in silicone. 154 mm girth (114 + 25 + 15 lip @ 15º) galvanised counter flashing, 3 x bends (1 is a shallow bend). Counter flashing (side wall is a brick wall) to overlap with side wall flashing with at least 75 mm. Cut 6 mm wide groove into brick wall parallel to roof sheeting for counter flashing. Prime joint and seal with an approved 6 x 6 mm poly-urethane sealant.
0,8 mm thick Galvanised baked	1200* mm wide (25 mm lips on sides bend down to angle of rib) x 925 mm girth, * width of roof monitors determine the final width of

enamel Flat Back Flashing	flat back flashing. Flat back flashing for full length between monitor and ridge. Fix flashing to roof sheeting with posidriv screws or sealed type Aluminium blind pop rivets. 150 mm overlap fixed and sealed with 2 rows of pop rivets and 2 rows of silicone. 1 row of broad flute polycloser bedded in silicone at bottom end of flat back flashing.
0,8 mm thick Galvanised baked enamel Wall Gutter	616 mm girth (154 vertical x 462 at slope), 1 x bend. Fix boundary/side valley gutter to top of valley rafter with posidriv screws and washers (seal with silicone) and impact nails (6 mm dia. x 60 long @ 200 c/c) to brick wall. 225 mm overlap fixed and sealed with 2 rows of pop rivets and 2 rows of silicone. 1 row x 0,6 mm thick galvanised narrow flute closers in ribs fixed to purlins with posidriv screws and washers; seal with silicone. 154 mm girth (114 + 25 + 15 lip @ 15º) Galvanised baked enamel counter flashing, 3 x bends (1 is a shallow bend). Counter flashing (side wall is a brick wall) to overlap with side wall flashing with at least 75 mm. Cut 6 mm wide groove into brick wall for counter flashing. Prime joint and seal with an approved 6 x 6 mm poly-urethane sealant.
0,8 mm thick Galvanised baked enamel Corner Piece Flashing (for monitors)	231 wide x 77 vertical x 462 long, shallow bend for horizontal portion. Fix flashing to roof sheeting with Posidriv screws or sealed type Aluminium blind pop rivets. Seal overlap with 2 rows of pop rivets and 2 rows of silicone. Provide broad flute polyclosers bedded in silicone in troughs.
Walls: (m)	
0,8 mm thick Galvanised baked enamel External Vertical Flashing	462 mm girth (231 + 231), 3 x bends (2 x shallow bends). Fix flashing to roof sheeting with Posidriv screws and washers. 150 mm overlap sealed with 2 rows of pop rivets and 2 rows of silicone.
0,8 mm thick Galvanised baked enamel Internal Vertical Flashing	462 mm girth (231 + 231), 3 x bends (2 x shallow bends). Fix flashing to roof sheeting with Posidriv screws with washers. 150 mm overlap sealed with 2 rows of pop rivets and 2 rows of silicone.
0,8 mm thick Galvanised Internal Vertical Flashing	462 mm girth (231 + 231), 3 x bends (2 x shallow bends), fix flashing to roof sheeting with Posidriv screws with washers. 150 mm overlap sealed with 2 rows of pop rivets and 2 rows of silicone.
0,8 mm thick Galvanised Drip Flashing	154 mm girth (64 vertical + 50 + 20 vertical + 20) standard drip flashing, 3 x bends. Fix flashing to girts or roof sheeting with sealed type Aluminium blind pop rivets or Posidriv screws with washers. 50 mm overlap sealed with one row of silicone and stitched together with sealed blind type pop rivets.
0,8 mm thick Galvanised baked enamel Window Flashings	154 mm girth 3 x bends. Different flashing details for sill, jamb and top of window. Contractor to provide details to Engineer for approval. One row of narrow flute polyclosers bedded in silicone above and below window frame. Fix flashings to girts or roof sheeting with Posidriv screws and washers or sealed type Aluminium blind pop rivets. 100 mm overlap sealed with 2 rows of pop rivets and 2 rows of silicone. Seal around window frame with silicone to waterproof flashings. 1 row x 0,6 mm thick Galvanised baked enamel broad flute metal closer for sill flashing.
0,8 mm thick Galvanised baked enamel Door Flashings	154 mm girth 3 x bends. Different flashing details for sill, jamb and top of window. Contractor to provide details to Engineer for approval. One row of narrow flute polyclosers bedded in silicone above and below window frame. Fix flashings to girts or roof sheeting with Posidriv screws and washers or sealed type Aluminium blind pop rivets. 100 mm overlap sealed with 2 rows of pop rivets and 2 rows of silicone. Seal around window frame with

	silicone to waterproof flashings. 1 row x 0,6 mm thick Galvanised baked enamel broad flute metal closer for sill flashing
0,8 mm thick Galvanised baked enamel Bull Nose Flashing	462 mm girth (262 +200 vertical), 3 x bends excluding curving (2 are shallow bends), Fix flashing to roof sheeting with Posidriv screws and washers. 300 mm max. overlaps (run outs) sealed with 2 rows of pop rivets and 2 rows of silicone. 1 row x 0,6 mm thick Galvanised baked enamel broad flute metal closer on side wall cladding. Provide one row of continuous silicone on rib. Contractor to measure radius on site prior manufacturing.
Roof Insulation: (m²)	
White Bubble Foil on white straining wires (abattoirs only)	Lay insulation strictly to manufacturer's specifications. Use 1,6 mm diameter white PVC coated straining wires @ 300 mm c/c max. Refer to clause 2.3.7 of Technical Specification BA: Roof Coverings.
420 RSA heavy duty reinforced reflective Aluminium foil	Lay insulation strictly to manufacturer's specifications. Refer to clause 2.3.7 of Technical Specification BA: Roof Coverings.
Rainwater Goods:(m)	
100 x 75 x 0,8 mm thick Galvanised baked enamel beaded non-supporting box gutter	Provide 25 x 1 mm thick galvanised fascia straps @ 686 c/c to support fascia of gutters; fix with 6 mm galvanised gutter bolts, nuts and washers. All accessories and ancillary items included. Roof sheeting troughs to be have drip bend.
100 x 75 x 0,6 mm thick Galvanised baked enamel down pipes; height < 5 m	Provide one down pipe for every 6 m of gutter length. For gutter length of 3 to 6 m, provide two down pipes. All accessories and ancillary items included.
125 x 100 x 0,8 mm thick Galvanised baked enamel self-supporting box gutter	Gutter to be braced back to the roof sheeting with a 25 x 1 mm thick galvanised fascia straps @ 686 c/c. The detail can only be applied to sheeting with a max. cantilever of 450 mm from first purlin. Roof sheeting troughs to be have drip bend.
125 x 100 x 0,8 mm thick Galvanised baked enamel down pipes	Provide one down pipe for every 6 m of gutter length. For gutter length of 4,5 to 6 m, provide two down pipes. All accessories and ancillary items included.
100 x 100 x 0,8 mm thick Galvanised baked enamel down pipes	Provide one down pipe for every 6 m of gutter length. For gutter length of 4,5 to 6 m, provide two down pipes. All accessories and ancillary items included.
Pipe Flashings: (No. and Dia.)	
EPDM/silicone pipe-through-roof flashings to diameter pipe flashings to diameter	For all residential type of buildings, pipe protrusions through roof sheeting will be eliminated by re-routing existing pipe work. For all other pipe protrusions: Use EPDM/silicone pipe-through-roof flashings to diameter no. 2 for pipe diameters 40 - 80 mm and EPDM/silicone pipe-through-roof flashings to diameter no. 4 for pipe diameters 80 - 150 mm. EPDM/silicone pipe-through-roof flashings to diameter flashings are made of E.P.D.M. rubber compound of a carbon black colour.
0,8 mm thick	Refer to roof and wall details no 1 and 2. (Bound into the back of

Galvanised baked enamel Cravat and Cowl Flashing to diameter	this document).
Pipework: (No.)	
Re-route existing pipes; diameter and number	<u>Re-routing of roof void geyser pipework:</u> Disconnect and remove existing overflow pupe from Latco - and or Safety Valve, supply and connect new 15-28mm dia polycop pipe to existing Latco - and or Safety Valve including all necessary fittings, adaptors, brackets, etc and re-route pipework in ceiling or roof void to protrude through external wall, including making good of external wall, irrespective of finish. Allow approximately 7m horizontal and 3m vertical pipework to ground level per geyser, complete with standard primer, one undercoat and two coats of super acrylic paint to exposed pipework to match existing paint system and colour. <u>Ventilation pipework:</u> Remove existing 100mm dia ventilation pipe section protruding through roof covering. Install 90° bend below roof level and re-route ventilation pipe to clear overhang. Install 90° reducing 100 x 50 bend and rise with 50mm dia pipe to 600mm. Install standard sewer pipe ventilation cowl on top of ventilation pipework. Pipe material must adapt to existing material of ventilation pipework. The bracketing and supports of the ventilation pipework shall be as per manufactuers specifications. Standard primer, one coat undercoat and two coats of super acrylic paint to exposed pipework to match existing paint system and colour.

BA.03.01 <u>DETAILS OF ROOF PAINT REPAIR WORK</u>

Specification of paint shall be an extremely durable weather and UV resistant coating system for Galvanised iron roofs or previously painted galvanised iron roofs.

A two coat system shall be used consisting of a two component recoatable polyurethane acrylic finish.

The mixing ratio of the dual pack enamel system shall be as per the manufacturer's specifications. Both components shall be stirred with a power mixer until homogeneous. The dual pack enamel system shall always be applied over a suitable primer and/or intermediate coats within the manufacture's specified over-coating intervals.

Contractor must ensure that the work is done by a competent person and must be approved by the Engineer before work may commence

<u>SURFACE PREPARATION – PREVIOUSLY PAINTED</u>

Remove all peeling paint by sanding, scraping or water cooled grinders fitted with reversible knotted wire brush. Care must be taken not to remove any sound galvanizing. Any unsound paint will fail at a later stage. Wash roof with Aquasolv degreaser, scotch brite pads and rinse thoroughly with clean water to ensure soluble chloride content <75mg per m^2. Ensure that all degreaser is properly washed off.

<u>SURFACE PREPARATION - UNPAINTED GALVANISED</u>

Wash roof with degreaser, scotch brite pads and rinse thoroughly with clean water. Ensure that all degreaser is properly washed off, to ensure soluble chlorine content <75mg per m^2.

APPLICATION

Apply one coat of a two component anti-corrosive strontium chromate epoxy primer by using airless spray. Allow 4 hours drying time. Apply a second coat if necessary to achieve the specified DFT of 25 – 35 microns.

Apply one coat of a dual pack polyurethane enamel system with acrylic finish by airless spray to achieve complete obliteration. Ensure that a single coat of wet film application of 88 – 135 microns is achieved. This will give a DFT of 50 – 75 microns. Application in high humidity environments (75% RH) may cause surface bloom.

GUARANTEE

The Contractor must give a written 5 year guarantee for the quality and workmanship of the paint work (fair wear and tear excepted). The Contract or shall be liable for any peeling or flaking paint applied by the Contractor and shall execute all such work of repair, rectification and making good of painted surfaces as may be ordered in writing by the Engineer. The manufacturer must carry out inspections at regular intervals during the construction period. He must issue a certificate of acceptance and compliance on completion to the client.

BA 03.2 SCHEDULED ITEMS

BA.01 Supply and install cladding and sheeting: _____ Unit: m²

The area measured will be that of the exposed surface of the finished building as specified in, Subclause 8.1.1 of SANS 1200 HB.

Separate items will be scheduled for roof sheeting and side cladding, subdivided for each type of sheeting, cladding and finish, each profile and straight or curved sheets.

The rate shall cover the cost of supplying, delivering, storing on Site, handling, moving, installing and fixing the sheeting or cladding (finished or prepainted as scheduled) complete with all necessary fasteners (all sheeting, cladding and accessories are to be supplied by a South African based manufacturer and are subject to a three year written guarantee for water tightness and workmanship). The rate shall also cover the cost of cutting, notching, waste, all scaffolding, temporary supports, hoisting facilities and safety precautions (see Subclause 8.1.1 of SANS 1200HB).

BA.02 Forming cranks, bullnoses, etc: Unit: m

Cranks, bullnoses, etc will be measured by length, with bullnoses to a maximum of 600mm radius and bend to maximum of 90°.

Separate items for cranks, bullnoses, etc, will be scheduled for each different type of sheeting, profile and finish.

The rate shall cover the cost of supplying, delivery, storing on Site, handling, moving, installing and fixing of cranks, bullnoses, etc and shall be measured as an extra over the specified roof sheeting. The rate shall also cover the cost of cutting, notching, waste, all necessary scaffolding, temporary supports, hoisting facilities and safety precautions (see Subclause 8.1.2 of SANS 1200 HB).

BA.03 Carefully remove existing cladding and sheeting: _____ Unit: m²

The area measured will be that of the exposed surface of finished building (see Subclause 8.1.1 of SANS 1200 HB).

Separate items will be scheduled for roof covering and side cladding, without differentiating amongst different profiles, etc.

The rate shall cover the cost of removing of existing roof sheeting or side cladding inclusive of flashings and sundry items from timber or steel purlins, and the removal from site of all such material. The rate shall also cover the cost of any scaffolding, temporary supports, hoisting facilities etc as well as credit for the redundant material becoming the property of the Contractor.

The rate shall also cover all temporary necessary dust screens, sheets, plastic linings, etc laid horizontal or vertical inside existing roof spaces or voids on top of ceilings, trusses, etc to protect all contents inside the buildings while replacing or repairing the roof coverings.

BA.04 Carefully remove and store existing cladding and sheeting: Unit: m^2

The area measured will be that of the exposed surface of finished building (see Subclause 8.1.1 of SANS 1200 HB).

Separate items will be scheduled for roof covering and side cladding without differentiating amongst different profiles etc.

The rate shall cover the cost of removing of existing roof sheeting or side cladding inclusive of flashings and sundry items from timber or steel purlins, the temporary storage of the removed sheeting or cladding at a store area (position of store area to be indicated on site). The rate shall also cover the cost of any scaffolding, temporary supports, hoisting facilities etc.

The rate shall also cover all temporary necessary dust screens, sheets, plastic linings, etc laid horizontal or vertical inside existing roof spaces or voids on top of ceilings, trusses, etc to protect all contents inside the buildings while replacing or repairing the roof coverings.

BA.05 Re-erect: Stockpilled cladding and sheeting: Unit: m^2

The area measured will be that of the exposed surface off the finished building (see Subclause 8.1.1 of SANS 1200 HB).

Separate items will be scheduled for roof covering and side cladding without differentiating amongst different profiles, etc..

The rate shall cover the cost of preparing, re-erecting, handling, moving, installing existing stockpiled sheeting and cladding including new fixing fastners, etc complete. The rate shall also cover the cost of cutting, notching, waste, all scaffolding, temporary supports, hoisting facilities and safety precautions (see Subclause 8.1.1 of SANS 1200HB).

BA.06 Supply and install sundry items, etc: Unit: m

Flashing, ridging, etc will be measured by length.

Separate items will be scheduled for each type, finish and shape of sundry item.

The rate shall cover the cost of supplying, delivery, storing on Site, handling, moving, installing and fixing the relevant item complete with all fasteners and sundry items as stipulated in BA.02.3.4.

The rate shall also cover the cost of cutting, notching, waste and of all scaffolding, temporary supports, hoisting facilities and safety precautions (see Subclause 8.1.1 of SANS 1200 HB).

BA.07 Supply and install roof insulation: Unit: m^2

The area measured will be that of the exposed surface, no deductions being made for openings left or cut for protrusions such as those specified in Subclause 5.7 of SANS 1200 HB, or for ventilators and the like. Deductions will be made for windows and other openings of similar dimensions.

The rate shall cover the costs of supplying, delivery, storing on Site, handling, moving, installing and fixing complete with all necessary fasteners as specified in BA.02.3.7, and shall also cover cost of cutting, notching, waste and of all scaffolding, temporary supports, hoisting facilities and safety precautions (see Subclause 8.1.1 of SANS 1200 HB).

BA.08 Supply and install rainwater goods: Unit: m

Rainwater goods and similar lengths of constant profile will be measured by length.

Sundry items such as stop-ends, bends, shoes, etc are deemed to be included in the tendered rate per metre.

Separate items will be scheduled for each type, finish, shape and when relevant, profile of rainwater goods. The rate shall cover the cost of supplying, delivery, storing on Site, handling, moving installing and fixing the relevant goods complete with all necessary fasteners, etc as specified in BA.02.5 (all complete and subject to a three year written guarantee on watertightness and workmanship). The rate shall also cover the cost of cutting, notching and waste, and of all scaffolding, temporary supports, hoisting facilities and safety precautions (see Subclause 8.1.1 of SANS 1200 HB).

BA.09 Carefully remove existing rainwater goods: Unit: m

The length measured will be that of the exposed length of finished building.

No separate items will be scheduled for size, thickness, material, profile, galvanized or Galvanised baked enamel finished items.

The rate shall cover the cost of removing of existing rainwater goods inclusive of brackets and sundry items from timber or steel purlins and trusses, the cost of any scaffolding, temporary supports, hoisting facilities etc and the allowance of credit for material to become the property of the Contractor and to be removed from the site.

BA.10 Miscellaneous items:

(a) Measured by number:

(i) (Description of item)..... Unit: No

(ii) Etc.

(b) Measured by linear metre:

(i) (Description of item)..... Unit: m

(ii) Etc.

The unit of measurement shall be the number or metre as applicable to each item.

The tendered rates shall include full compensation for manufacturing or providing and installing each item complete as per BA.03.1.

BA.11 Roof rehabilitation: Unit: m²

The area measured will be that of the exposed surface of building as specified in Subclause 8.1.1 of SANS 1200 HB. Separate items will be scheduled for roof sheeting and side cladding, without differentiating between different profiles, finishings, fixing methods, etc.

The rate shall cover the cost for inspecting, removing existing and supplying and fixing new posidriv screws and mechanisms, sealants, sealer strips, etc complete.

The rate shall also cover the cost of cutting, waste, all scaffolding, temporary supports, etc all to the approval of the Engineer.

BA.12 Supply and install additional fixing screws, etc: Unit: No

The unit of measurement will be the number of additional screws installed.

The rate shall cover the cost for removing defective fixing screws as indicated by the Engineer, and replacing aforesaid with new posidriv or equivalent approved fixing screws in similar previous positions.

No separate items will be scheduled for roof sheeting, side cladding or different profiles. Payment under this item shall not include the screws to be replaced under the roof rehabilitation item above.

BA.13 Carefully remove and re-erect ventilation units: Unit: No

The unit of measurement will be number of ventilation units removed, temporarily stored and resized to similar positions.

The rate shall cover the cost for carefully removing existing ventilation units approximately 2,5m² in area from existing roof structures, temporary storage, servicing of existing ventilation units, cleaning, re-erecting later onto new roof sheeting (irrespective of type or profile of sheeting), new ventilation flashings and counter flashings, sealants, fixing screws, fasteners, etc complete. The rate shall also cover the cost for cutting openings into new sheeting for ventilation units, waste, all necessary scaffolding, temporary supports, hoisting facilities and safety precautions (see Subclause 8.1.1 of SANS 1200 HB).

BA.14 Carefully remove and re-erect birdproofing: Unit: m²

The area measured will be that of the exposed surface to be covered with bird-proofing.

The rate shall cover the cost for carefully removing chicken wire bird-proofing stapled to each roof truss tie beam at roof overhang between beam-filling and fascia board,

temporary storage, cleaning of bird-proofing, re-erecting later into similar previous position. The rate shall also cover the cost for cutting, fixing staples, waste, scaffolding, etc.

BA.15 Prepare existing roof sheeting and repaint: Unit: m^2

The area measured will be that of the exposed surface of roof sheeting painted (measured on flat area as for roof coverings.)

The rate shall cover the cost for removing existing paint and cleaning surfaces with an approved degreaser and scotch brite pads and rinsing thoroughly by means of pressure washing to receive one new primer coat and one coat dual pack poly-urethane enamel system with acrylic finish roof paint, supplying, delivery and applying new primer and finishing coat, etc., without distinguishing between roof sheeting, side cladding, profile, finish, etc., as specified in BA 03.02

The rate shall also cover the cost of waste, all necessary scaffolding, etc.

BA.16 Replacement of existing roof tiles in patchwork: Unit: number

The unit of measurement will be number of roof tiles removed, installation of new roof tiles similar to existing roof tiles.

The rate shall cover the cost for carefully removing existing roof tiles approximately 350mm x 350mm in area from existing roof structures, installation of new roof tiles and ridge flashings, sealants, fixing screws, fasteners, etc complete. The rate shall also cover the cost, waste, all necessary scaffolding, temporary supports, hoisting facilities and safety precautions.

BA.17 Pressure Clean existing roof tiles: Unit: m^2

The area measured will be that of the exposed surface of roof tiles pressure cleaned (measured on flat area as for roof coverings.)

The rate shall cover the cost for removing existing dirt and cleaning surfaces by means of pressure washing with an approved degreaser and rinsing thereof.

The rate shall also cover the cost of water connection, all necessary scaffolding, etc.

TECHNICAL SPECIFICATION

BB CARPENTRY AND JOINERY FOR ROOFS AND CEILINGS

CONTENTS

BB 01 SCOPE

Carpentry and joinery shall mean the maintenance of materials and components such as removal of existing timber roof trusses, purlins, ceilings, etc, and the installation of new timber trusses and other timber roof members, structural beams, purlins, battens and ceilings. This specification does not include work related to roof coverings and paintwork, which are specified elsewhere.

This specification covers the corrective maintenance repairs of existing timber members in roof trusses, the removal and replacement of existing timber members from roof trusses and associated timber roof members and ceilings. This specification also covers the supply, delivery and installation of new timber trusses, purlins, battens and beams for various types of timber related structures and ceilings.

The complete scope of repair work shall be as described in BB 04: Detail of repair work.

Maintenance of this part of the installation shall be performed in accordance with Additional Specification SA: General Maintenance and part 4.2 (Scope of Services, availability and Matrix of Services).

BB 02 STANDARD SPECIFICATIONS

BB 02.01 GENERAL STANDARD SPECIFICATIONS

The latest edition, including all amendments up to date of tender, of the following specifications, publications and codes of practice shall be read in conjunction with this specification and shall be deemed to form part thereof:

SANS 10243	-	The design, manufacture and erection of timber trusses
SANS 266	-	Gypsum plasterboard
SANS 1783 - 2	-	Stress-graded softwood: general structural timber
SANS 1783 - 4	-	Softwood brandering and battens
SANS 803	-	Fibre-cement boards

BB 02.02 ADDITIONAL SPECIFICATIONS

Technical Specification BA: Roof coverings Technical Specification BD: Walls Technical Specification BJ: Paintwork

BB 02.03 OCCUPATIONAL HEALTH AND SAFETY

The Contractor shall be required to comply with the Occupational Health and Safety Act 85 of 1993, Construction Regulations 2014 and related regulations. Non-compliance with these regulations, in any way whatsoever, will be adequate reason for suspending the Works.

BB 03 VARIATIONS AND ADDITIONS TO STANDARD SPECIFICATIONS

BB 03.01 ADDITIONAL REQUIREMENTS FOR REPAIR OF TIMBER ROOF STRUCTURES

BB 03.01.01 Timber trusses

(a) Replacing timber trusses

The Engineer shall inspect timber trusses for defects and establish which timber trusses must be replaced.

Reasons for replacing trusses will include but not be limited to the following:

(i) Deflection exceeding acceptable limits;
(ii) Inadequacy in design, e.g. structural strength, structural instability, load conditions;
(iii) Decay of large portions of truss members (defective timber);
(iv) Large portions of truss members having so many defects e.g. cracked timber, corroded connector nail plates, etc, that it will be uneconomical to repair the defects.

(b) Repair of timber trusses

Repair work shall include but not be limited to the following:

(i) Strengthening of truss members, connections, splices and anchorage at supports;
(ii) Strengthening of truss members due to unforeseen loads, notching and cutting for services by other contractors;
(iii) Repair of truss members where large knots and wanes occur;
(iv) Replacing metal plate connectors in cases of corrosion, incorrect application of connector plates, incorrect size of connector plates, unsymmetrically fitted connector plates, connector plates with teeth flattened, minimum bite of less than 65 mm of a connector plate on a truss member;
(v) Replacing of decayed timber, particularly rafter ends at roof overhangs and at roofing screws. Timber subjected to insect attack and fungal decay should be treated with an appropriate preservative. Where there is a low risk of decay or insect attack, two coats of Creosote may be applied to the timber.
(vi) Replacing and/or repair of cracked timber members. Galvanised connector plates and metal straps may be considered;
(vii) Maximum slenderness ratio must be less than 180 for compression members that carry forces resulting from dead and live loads. Compression members 36 mm thick and longer than 1,8 m must have a continuous longitudinal runner centrally placed (or T-bracing) and properly connected and braced. For members that resist loads caused by wind, the slenderness ratio must be less than 250;
(viii) Plumb of trusses should not exceed 100 mm or total span/20 whichever is the least;
(ix) Exposed portions of the trusses shall be painted to match existing appearance.

The roof trusses shall be fully braced. The Engineer shall give instructions regarding the provision of bracing members to the roof system.

BB 03.01.02 Purlins (for sheeted roofs, battens for tiled roofs)

(a) Replacing timber purlins

The Engineer shall inspect timber purlins for defects and possible reuse. The Engineer shall establish which timber purlins need to be replaced.

Reasons for replacing purlins will include but not be limited to the following:

(i) Decayed timber, particularly at gable overhangs;
(ii) Broken, warped and brittle timber;
(iii) Worn-out roof screw holes;
(iv) Inadequacy in design, e.g. structural strength and excessive deflection due to large spans;
(v) Inappropriate spacing of purlins for the specific roof covering.

(b) Repair of timber purlins

Repair work shall include but not be limited to the following:

(i) For roof pitches under 45º the purlins shall be erected on edge (narrow edge).
(ii) All purlins shall be secured to rafters at each intersection in addition to nails. In roof voids a single 3,2 mm diameter galvanised wire tie bound twice with twisted ends or a galvanised bent plate connector shall be used for securing purlins to rafters. On roof overhangs only galvanised bent plate connectors shall be used for securing purlins to rafters.
(iii) Splices shall be staggered. Splices that do not conform to the requirements of clauses 8.5.1 and 8.5.2 of SANS 10234, must be repaired. Nailed galvanised plate connectors on either side of purlins are also acceptable.
(iv) Exposed portions of the purlins shall be painted to match existing appearance.

Skew nailing of purlins to trusses shall not be closer than 30 mm from the edge of the member.

BB 03.01.03 Structural timber

(a) Replacing structural timber

The Engineer shall inspect members of structural timber, i.e. beams and columns, for defects and shall establish which of these members must be replaced. Reasons for replacement will include but not be limited to the following:

(i) Deflection exceeding acceptable limits;
(ii) Inadequacy in design, e.g. structural strength, structural instability, load conditions;
(iii) Decay of a large portion of the member (defective timber);
(iv) Replacing of decayed timber, particularly at ends of beams.

(b) Repair of structural timber

Repair work shall include but not be limited to the following:

(i) Strengthening of members, connections, splices and anchorage at supports;
(ii) Strengthening of members due to unforeseen loads, notching and cutting for services by other contractors;
(iii) Exposed portions of structural timber shall be painted to match existing appearance;
(iv) Bolt connections shall be in accordance with the requirements of SANS 10163.

BB 03.01.04 Ceilings

(a) Brandering to ceilings

Brandering to ceilings shall be replaced where:

(i) Ceiling boards are replaced;
(ii) Brandering is broken, rotten and beyond any further use.

The brandering shall continue over at least three bays and shall be staggered to ensure that splices do not all occur in one line. Brandering must be provided for light fitting support.

(b) Gypsum ceiling boards

Repairs to existing ceilings shall include the installation of new 6,4 mm thick gypsum ceiling boards with metal H-section jointing strips. The new ceiling boards shall be nailed to brandering with galvanised or cadmium-plated clout-headed nails.

Gypsum ceiling boards shall not be used in wet areas such as in ablutions, abattoirs, kitchens and bathrooms.

Ceiling boards shall be in long lengths, symmetrically arranged with smaller panels, closely butted and secured at 150 mm centres to brandering as specified.

Where it is necessary to replace ceiling boards onto existing brandering, new boards shall be installed by first drilling through and then securing with cadmium- plated flat headed wood screws, or alternatively by shot nailing to suit, to avoid unnecessary vibration or impact damage to adjacent elements.

Gypsum cove cornices 76 mm wide shall be provided where existing cornices are to be replaced.

Existing trap doors in ceilings shall be reused. If required, new 650 x 650 mm trap doors shall be installed.

No ceiling insulation must be provided unless specified.

Painting of the ceiling shall be done in accordance with Technical Specification BJ: Paintwork.

(c) Fibre cement ceiling boards

Fibre cement ceiling boards shall be installed in wet areas such as in ablutions, abattoirs, kitchens and bathrooms.

Fibre cement ceiling boards shall be 6 mm thick, complying with the requirements of SANS 803 and of the flat pressed type.

The boards shall be nailed to the brandering with 2 mm diameter galvanised or cadmium-plated clout-headed nails, spaced at 100 mm centres at edges of boards and 150 mm centres along the intermediate brandering. Ceiling boards shall be in long lengths, symmetrically arranged with smaller panels as required and closely butted.

Replacement of new ceiling boards onto existing brandering shall be done as described in BB 03.01.04(b) above.

Fibrous plasterboard cove cornices to ceilings shall be of 100 mm girth, provided by an approved manufacturer. Gypsum cove cornices 76 mm wide can be used in kitchens and bathrooms of houses. Powder-coated wall angles 25 mm wide shall be used for cornices in abattoirs.

Existing trap doors in ceilings shall be reused. If required, new 650 x 650 mm trap doors shall be installed.

Painting of the ceiling shall be done in accordance with Technical Specification BJ: Paintwork.

(d) Exposed T-system suspended ceilings

Repairs to existing suspended ceilings will include but not be limited to the following:

(i) Replace damaged panels with new ceiling boards;
(ii) Replace sections of damaged T-strips or H-strips;
(iii) Replace cornices;
(iv) Tension, fix and realign existing hangers;
(v) Install new hangers as required;
(vi) Clean ceiling boards, including washing of the ceiling boards with a mixture of water and sugar soap and wiping dry, or painting the ceiling boards.

(e) External gable fibre cement boards for side cladding

External tongued and grooved boarding shall be removed and replaced with 6 mm thick flat pressed fibre cement boarding. The boarding shall be fixed to new brandering as specified in this section. Provide painted 25 x 25 mm meranti quarter rounds at edges as required.

The boarding shall be painted in accordance with Technical Specification BJ: Paintwork.

BB 03.01.05 Fascia and barge boards

Repairs to fascia and barge boards shall include but not be limited to the following:

(a) Replace damaged and broken fibre cement fascia and barge boards.
(b) Replace missing, corroded and damaged H-profile jointing strips.
(c) Replace all nails with suitable length and diameter brass screws. Provide nylon plugs to timber where necessary.

(d) Align and fix existing fascia and barge boards.
(e) Paint fascia and barge boards in accordance with Technical Specification BJ: Paintwork. All sides including the edges must be painted.

(f) The roof covering shall cover the top edge of the fascia on gables.

BB 03.01.06 Timber trusses, purlins and battens

(a) Existing timber trusses and roof structure

(i) General

(1) The Contractor shall establish proper access and install adequate lighting to the roof voids to enable detailed inspections of structural deficiencies by the Engineer. Temporary scaffold planks shall be laid across bottom chords to allow access to all critical areas. After inspection, the extent of repairs is to be agreed with the Engineer.

(2) All completed work shall be inspected and approved by the Engineer.

(3) All new timber work shall comply with SANS 10163.

(4) Timber grade shall be S5 and replacement sizes are to match existing unless otherwise agreed.

(5) Repair details on attached sheets R1 to R3 shall form the basis for repairs. Any deviations from or variations to these details are to be approved by the Engineer. Any types of failure not covered by these details shall be discussed with the Engineer who will then issue the necessary repair instructions.

(ii) Procedures (watermarked and slightly rotten members)

(1) Watermarked and slightly rotten members need not be replaced or repaired if the following test indicate these members to be satisfactorily:

Using a 3,5 mm nail, make scratch marks in all these members to expose good unaffected timber. If scratch depth is 2 mm or less, it is acceptable and these members need only to be treated as described in (2) below.

(2) The members shall be wire-brush cleaned, free of any loose or deleterious material, then treated with 1 coat of creosote, or similar approved. Apply by brush to affected areas and 200 mm beyond, all to the manufacturer's specifications. Safety precautions shall be taken against possible health or fire hazards as specified by manufacturer.

(iii) Procedures (cracked and failed members)

(1) All members that are cracked right through will be regarded as failed members. Members with minor longitudinal cracks shall be repaired, following procedure 5 on sheet R3.

(2) The Contractor must allow for propping and/or bracing at failed members to ensure complete structural stability during repairs.

(3) Failed members as indicated in details 1 to 4 on sheets R1 to R3 shall be realigned by means of clamping with temporary backing pieces, after which repairs can proceed.

(4) Members that are damaged too badly to effect repairs will have to be replaced or doubled up to suit the circumstances.

(5) Once all repair work has been completed the Contractor must clean out the ceiling void, free of all rubbish, excess building material and all other foreign matter and make good any damage caused to ceilings, etc.

(6) Any alternative repair proposal shall be submitted in writing to the Engineer.

BB 03.01.07 Requirements for construction

Roof and timber construction and erection is to be supervised or overseen by an ITC qualified erector or person.

BB 04 DETAIL OF REPAIR WORK

The detail of the work is described in the Schedule of Quantities.

BB 05 MAINTENANCE

Maintenance requirements will be itemised in the Bill of Quantities and will be instructed to the Contractor.

BB 06 MEASUREMENT AND PAYMENT

BB 06.01 MEASUREMENT AND RATES

BB 06.01.01 General inclusion of costs

Notes:

All material scheduled to be removed shall be deemed to be existing damaged materials in small or large sections. All such redundant material shall become the property of the Contractor and must be removed from site immediately.

All new material used for repair work shall be of approved equal quality, colours, profiles, thickness, etc and shall in all cases match the existing materials and shall be fixed (internally or externally) to existing material or surfaces.

All replacement, removal and repair work shall be done carefully as to not damage any adjacent or other material or work. Any damage to other or adjacent materials or areas caused by the negligence of the Contractor shall be repaired by him free of charge.

All work scheduled to be removed or taken out shall be deemed to include the cleaning and preparation of the remaining sections, areas, or work to receive the new material or work specified.

Repair work shall also include all cutting, grinding, cutting into, welding, bending, strengthening, drilling, etc to repair or to improve the items or areas as new and to match the existing.

Work scheduled to be realigned and refixed shall be deemed to include all necessary new additional materials, brackets, connector plates, bolts, pip rivets, nails, screws, spacer blocks, clamps, timber, and labour, etc to leave the items as new and totally functional.

All new work are measured net and shall include all cutting, lapping, waste, bending, fixing, corners, mitres, fixing screws, pip rivets, nails, adhesive, grout, putty, etc, as well as cleaning and preparation of surfaces not already prepared as part of removed items, etc.

Unless scheduled otherwise, new ceilings and ceilings in patchwork shall be fixed to existing brandering and the Contractor must take special care not to damage the existing brandering when removing damaged ceiling boards.

BB 06.02 SCHEDULED ITEMS

NEW WORK

BB.01 Structural timber:

(a) Plates (sizes indicated)..... Unit: m

(b) Beams (sizes indicated)..... Unit: m

(c) Joists (sizes indicated)..... Unit: m

(d) Rafters (sizes indicated) ..... Unit: m

(e) Purlins (sizes indicated)..... Unit: m

(f) Roof trusses complete (drawing number indicated) ..... Unit: number

(g) Etc

The unit of measurement shall be the metre of individual types of timber elements or number of complete trusses installed.

The tendered rates shall include full compensation for the supply of all materials, manufacture, cutting, waste, jointing, scaffolding, temporary supports, hoisting facilities and installation of the timber as specified, scheduled or shown on the Drawings.

BB.02 Ceilings:

(a) Ceiling boards, trapdoors, cornices, cover strips, etc (type and/or thickness indicated):

(i) Thickness, shape and description of applications.....Unit: m^2, m, number

(ii) Etc for other thicknesses, shapes, etc

The unit of measurement shall be the number, metre or square metre of ceiling boards, trapdoors, cornices, etc installed complete as specified and scheduled.

The tendered rates shall also include full compensation for the construction of the ceilings, trapdoors, cornices, cover strips, etc including jointing strips, insulation blankets and brandering as specified.

BB.03 Joinery:

(a) Items measured by number:

(i) Doors, etc (type and size indicated)..... Unit: number

(ii) Etc for other items measured by number

(b) Items measured by linear metre:

(i) Skirtings, rails, cover strips, quadrant beads, etc (size indicated) ..... Unit: m

(ii) Etc for other items measured by length

(c) Items measured by area:

(i) Eaves covering, etc (type and thickness indicated)..... Unit: m^2

(ii) Etc, for other items measured by area

The units of measurement shall be the number, metre or square metre of each type and/or size of joinery item specified and installed complete.

The tendered rates shall include full compensation for the supply of all materials, manufacture, cutting, waste, fixing, scaffolding, temporary supports, hoisting facilities and installation of the joinery items.

Ironmongery to be included in the rates tendered for doors shall be as specified in the Technical Specification BD: Walls.

New joinery, will except where otherwise specified, be fixed or hung to existing material or surfaces.

ALTERATION WORK

BB.04 Alterations and repairs to existing structures:

(a) Indicate if repairs, alterations, removal or sealing, etc:

(i) Description of individual items to be repaired, replaced, altered, removed, sealed, etc ..... Unit: m^3, m^2, m, number

The unit of measurement for items repaired, replaced, altered, removed, sealed, etc shall be cubic metre, square metre, metre or number as scheduled. No distinction between sizes or profiles will be made for the removal of structural timber elements.

The tendered rates shall include full compensation for all costs to repair, refix, remove, cutting into, re-align, taking off, handling, temporary store, scaffolding, temporary supports, hoisting facilities and preparing existing remaining material or surfaces where applicable to receive new items as well as for credit for the redundant material becoming the property of the Contractor, etc as specified in the Standard and Technical Specifications and shall allow for all necessary labour, plant and new material needed for the repairs, replacement or alterations, etc to leave the scheduled items as new and to the approval of the Engineer. Refer also to the general inclusion of costs in BB.06.01.01."

BB.05 Repairs to watermarked and slightly rotten timber roof members: Unit: m

The unit of measurement shall be the linear metre of timber roof members repaired as specified. No distinction will be made for size, type of member or position.

The tendered rate shall include full compensation for the complete repair work, wire brushing, creosote, etc as specified by the Engineer.

BB.06 Repairs to damaged masonry, plastering and surface finishes:

(a) Items measured by number:

(i) Description of item ..... Unit: No

(ii) Etc ..... Unit: m

(b) Items measured by linear metre:

(i) Description of item ..... Unit: No

(ii) Etc ..... Unit: m

The unit of measurement shall be the number or metre as applicable to each item.

The tendered rates shall include full compensation for the making good of masonry (stock or face bricks), beam-filling, plastering, painting, closing ends to troughs of sheet metal roof sheeting, repairs to structure at ends of rafters and purlins, protruding through brick walls, etc.

The tendered rate shall also cover the cost of cutting, notching and waste and of all scaffolding, temporary supports, etc.

BB.07 Painting to top cords of timber trusses in roof voids: Unit: m

The unit of measurement shall be the metre.

The tendered rate shall include full compensation to prepare existing top cords (where applicable) to receive one coat creosote. No distinction will be made for size, type, new or existing members. The rate shall also cover the cost for waste, all scaffolding, etc.

BB.08 Painting of existing members in overhangs: Unit: m

The unit of measurement shall be the metre.

Separate items will be listed for paint and/or creosote as specified.

The tendered rate shall include full compensation to prepare existing overhangs to receive paint or creosote as specified. No distinction will be made for size of existing members. The rate shall also cover the cost for waste, all scaffolding, etc.

TECHNICAL SPECIFICATION

BC WATERPROOFING OF CONCRETE ROOFS

CONTENTS

BC 01 SCOPE

This specification covers the corrective maintenance repairs of existing cement screeds and waterproofing, including all sundries, the removal of waterproofing and the supply, delivery, installation of new cement screeds, waterproofing and sundries for various types of concrete roofs.

Waterproofing shall mean the work to be carried out to repair/replace and maintain waterproofing materials and components, such as the repair/removal and maintenance of existing cement screeds and waterproofing and the installation of new cement screeds and waterproofing. This specification does not include work related to concrete work, plastering, gutters and downpipes specified elsewhere.

The complete scope of the repair work shall be as described in BC 04: Detail of repair work.

Maintenance of this part of the installation shall be performed in accordance with Additional Specification SA: General Maintenance, and part 4.2 (Scope of Service, availability and performance and Matrix of Services).

BC 02 STANDARD SPECIFICATIONS

BC 02.01 GENERAL STANDARD SPECIFICATIONS

The latest edition, including all amendments to date of the following specifications, publications and codes of practice, shall be read in conjunction with this specification and shall be deemed part to form part thereof:

PW 371-		Specification of Materials and Methods to be used (Fourth revision, October 1993)
SANS 10021	-	SANS code of practice: Waterproofing of buildings.

BC 02.02 ADDITIONAL SPECIFICATIONS

Technical Specification BE: Floors
Technical Specification BF: Structural concrete

BC 02.03 OCCUPATIONAL HEALTH AND SAFETY

The Contractor shall be required to comply with the Occupational Health and Safety Act 85 of 1993, Construction Regulations 2014 and related regulations. Non- compliance with these regulations, in any way whatsoever, will be adequate reason for suspending the Works.

BC 03 VARIATIONS AND ADDITIONS TO STANDARD SPECIFICATIONS

BC 03.01 ADDITIONAL REQUIREMENTS FOR REPAIR OF WATERPROOFING ON CONCRETE ROOFS

BC 03.01.01 Introduction

Section 6 Parts 6.4.1, 6.4.2 and 6.4.4 of PW 371 shall be adhered to when open concrete roofs are waterproofed. Existing waterproofing that leaks shall be replaced.

BC 03.01.02 General

Waterproofing materials shall be transported, handled and stored with care and laid strictly in accordance with the manufacturer's instructions. A clean, dry, smooth, firm and structurally adequate base with a fall of at least 1 in 50 (depending on the material selected) is required, with drainage to gutters and/or rainwater outlets on rood edges, as relevant. Attention shall be given to the detailed design of openings, projections, gutters, down pipes and finishes to make adequate provision for run-off water and to minimize blockages.

Corners and edges shall be covered or angle-rounded. Run-off over the edges of slabs shall be eliminated as this causes stains to the building. Fillets of 75 x 75 mm shall be provided at up stand corners.

The necessary gradient for waterproof membranes are normally provided on top of structures in low-density screeds and then finished, if necessary, with a cement/mortar topping. Screeds and toppings shall be of sufficient quality to provide a firm base. The following screed characteristics are suggested for waterproofing purposes:

(a) Compressive strength of at least 25 MPa at 28 days;
(b) Steel-trowel finish (light);
(c) Drying shrinkage of less than 0,2 % when tested in accordance with the testing conditions specified in SANS 836;
(d) Minimum screed thickness of 40 mm;
(e) Maximum moisture content of screeds:
    (i) Applications with a density of less than 500 kg/m^3 : 10 %
    (ii) Applications with a density exceeding 500 kg/m^3 : 7 %.

The screed should be cast or sawn into panels that do not exceed 9 m^2 to cater for drying shrinkage and to control cracking.

BC 03.02 MATERIALS

The more commonly used waterproofing materials are listed below, as well as some general comments on these materials. It is suggested that the manufacturers be consulted with regard to specific products. The Engineer's approval of the selected product shall be obtained prior to ordering.

BC 03.02.01 Bituminous materials

(a) Polymer modified bitumen membranes
(b) Reinforced bitumen emulsions.

BC 03.02.02 Plastomeric membranes

Plastics such as polyvinyl chloride (PVC) are applied as single-layer systems and are loose-laid or fully bonded. A high degree of skill is required for the laying of these membranes.

BC 03.02.03 Reinforced liquid applied systems

Membranes based on acrylic polymer (or modified acrylic polymers) binders, reinforced with woven polyester or polypropylene fabrics, perform well as waterproofing membranes and are durable. These fully bonded systems require detailed specifications and strict supervision during application to prevent malpractice.

BC 04 DETAILS OF REPAIR WORK

The Schedule of Quantities indicates approximate quantities of work. Detailed instructions will be issued during construction.

BC 05 MAINTENANCE

This specification shall be read in conjunction with Additional Specifications SA: General Maintenance.

All components that form part of the waterproofing of concrete roofs shall be maintained during the maintenance phase of the Contract.

Maintenance shall include all repair work, replacing of components, routine inspections, repairing of defects or other actions or rectifying measures required to maintain the perfect functional condition of waterproofing on concrete roofs in accordance with the operation and maintenance manuals and as specified. All roofs shall be kept leak-free and watertight.

Maintenance of the waterproofed concrete roofs shall include all related actions such as replacing/repairing loose and blistering waterproofing, including cracked waterproofing membranes, loose seams, painting of waterproofing membranes, and cleaning and removing rubbish from waterproofed concrete roofs.

Remuneration for maintenance of the complete waterproofing of concrete roofs shall be deemed included in the tendered monthly payment for the maintenance thereof.

BC 06 MEASUREMENT AND PAYMENT

BC.01 MEASUREMENT AND RATES

BC.01.01 General inclusion of costs

Notes:

New waterproofing material scheduled shall be deemed to include all preparation of existing concrete or waterproofed areas and jointing of new to existing material. Where new material is to join existing material, the new material shall be of the same type and system as the existing waterproofing system. All waterproofing shall come with a ten year written guarantee for water-tightness and the cost of such guarantee shall be deemed to be included in the applicable tendered rates.

BC.02 SCHEDULED ITEMS

NEW WORK

BC.02.01 Approved waterproofing system to:

(a) Description of waterproofing system:

(i) Area of application or description of detailed item..... Unit : m², m, number

The unit of measurement shall be the square metre, meter or number of areas or items waterproofed as specified and scheduled.

The tendered rates shall include full compensation for the supplying, delivering, storing on site, handling, moving, applying or installing and fixing the waterproofing system complete with all necessary sundry items, such as forming turn-ups or turn-downs, any flashing strips, dressing waterproofing around pipes and into outlets and channels.

The tendered rates shall also cover the cost for cutting and waste and for scaffolding, hoisting facilities, etc. All turn-ups and turn-downs will be deemed to be included in the area measured for the waterproofing and will not be paid for separately.

ALTERATION WORK

BC.02.02 Remove existing waterproofing and sundry items:

(a) Description of waterproofing material to be removed and location ..... Unit: m^2

(b) Etc, for other material and locations

The unit of measurement shall be square metre of material removed.

The tendered rate shall include full compensation for the removing of existing waterproofing, flashing strips, sundry items, etc.

BC.02.03 Prepare existing surfaces:

(a) Prepare existing concrete surface to receive new screed as specified ..... Unit: m^2

(b) Prepare existing concrete or screeded surface to receive new waterproofing system ..... Unit: m^2

The unit of measurement shall be the square metre of the exposed surface prepared to receive the new screed or waterproofing material.

The tendered rates shall cover the cost for preparing the existing surfaces as specified and scheduled in (a) and (b) to receive new screeds or waterproofing.

BC.02.04 Roof screeds: ..... Unit: m^2

The unit of measurement shall be the square metre of exposed surfaces to be screeded.

The tendered rate shall include all costs for supplying, delivering, storing on site, handling, etc of the materials necessary for the screed, including mixing and laying of screeds to currents and falls and forming of sundry items such as fillets, etc complete. The tendered rate shall also cover the cost for forming of screeds around outlets, waste, and of all scaffolding, temporary supports, hoisting facilities, etc.

BC.02.05 **Repair bituminous based waterproofing system** ..... Unit : m²

The unit of measurement shall be the square metre of the horizontal and vertical surfaces of waterproofing repaired to the approval of the Engineer. All turn-ups and turn-downs will be deemed to be included in the area measured for the waterproofing and will not be paid for separately.

The tendered rate shall include all costs for supplying, delivering, storing on site, handling, moving, installing and fixing the waterproofing system complete with all necessary sundry items, such as flashing strips, dressing waterproofing around pipes and into outlets and channels. The tendered rate shall also cover the cost of cutting and waste and for scaffolding, hoisting facilities, etc.

TECHNICAL SPECIFICATION

BD WALLS

CONTENTS

BD 01 SCOPE

This specification covers the corrective maintenance repairs of existing interior and exterior walls including all related building elements such as plastering, partitioning, wall tiling, windows, doors, etc, which form an integral part of an installation.

In determining the remedy for any repair work, the Engineer must take the climatic conditions in which all building elements have to function into consideration. Allowance should be made accordingly for the strength and durability of all components in relation to their purpose and application.

This specification does not include any work related to paintwork as this is specified elsewhere.

The complete scope of repair work shall be in accordance with the section: Detail of repair work.

BD 02 STANDARD SPECIFICATIONS

BD 02.01 GENERAL STANDARD SPECIFICATIONS

The latest edition, including all amendments up to date of tender of the following specifications, publications and codes of practice shall be read in conjunction with this specification and shall be deemed to form part thereof. All other relevant and applicable SANS regulations are also to be considered as minimum requirements, and in particular SANS 10400: The Application of the National Building Regulations.

SANS	22	-	Glazed ceramic wall tiles and fittings
SANS	227	-	Burnt clay masonry units
SANS	545	-	Wooden doors
SANS	622	-	Gypsum cove cornice
SANC	680	-	Glazing putty for wood and steel sashes
SANS	727	-	Windows and doors made from rolled mill steel sections
SANS	10107	-	The fixing of glazed wall tiles
SANS	1236	-	Silvered glass mirrors for general use
SANS	1263	-	Safety and security glazing materials for buildings

BD 02.02 ADDITIONAL SPECIFICATIONS

Technical Specification BG: Metalwork Technical Specification BH: Fittings Technical Specification BJ: Paintwork

BD 02.03 OCCUPATIONAL HEALTH AND SAFETY

The Contractor shall be required to comply with the Occupational Health and Safety Act 85 of 1993, Construction Regulations 2014 and related regulations. Non- compliance with these regulations, in any way whatsoever, will be adequate reason for suspending the Works.

BD 03 VARIATIONS AND ADDITIONS TO STANDARD SPECIFICATIONS

BD 03.01 ADDITIONAL REQUIREMENTS FOR REPAIR OF PLASTERED AND UNPLASTERED WALL SURFACES

BD 03.01.01 Introduction

A detailed survey of all existing building elements may reveal the necessity for remedial work of varying degree. The Engineer shall make an assessment of all aspects that need to be addressed.

BD 03.01.02 Plastering: General

All plaster shall comply with the requirements of SANS Standard Specification 523 and section 14 of OW 371. All plastering shall be painted in accordance with Technical Specification BJ: Paintwork, or tiled according to this specification BD.

The Engineer shall inspect the plaster surfaces and establish which wall plastering must be repaired. Reasons for replacing existing plastering will include, but not limited to the following:

(a) Excessive plaster cracking
(b) Loose (delaminated) and spalling plaster
(c) Dusting
(d) Scaling and flaking
(e) Defective plaster mix.

All chases shall be marked out in straight lines and neatly cut on either side of the recess for the pipe/conduit with an angle grinder. The width of the removed plastering must extend at least 30 mm beyond the edge of the chasing. Pipes or conduits shall be fixed before commencing grouting and plastering.

After the pipe has been put in place, the void shall be filled with a non-shrink cement grout of 60 MPa compressive strength at 28 days. The chases shall then be covered by fixing with shot-fired nails a weld mesh strip (30 mm longway x 10 mm shortway x 0,5 mm thick expanded metal lath) before applying the final plaster.

BD 03.01.03 Plastering: Walls of wet areas

Where necessary, hack off and remove existing internal plaster to walls. The substrates must be prepared to be sound, free from cement, grout, laitance, loose or segregated materials, voids or flaws and substances that could interfere with bonding of the new plaster. This preparation work can be done by means of clipping away with a chisel, steel-wire brush and angle grinders to the satisfaction of the Engineer. Smooth concrete must be chipped mechanically to prepare for bonding of new plaster. Before plastering commences, the substrates must be well wetted with clean water.

Only approved ready-mixed or pre-mixed bagged plaster mortar with 10 MPa compressive strength or equivalent may be used for plastering. Mix a liquid waterproofing admixture in a dilution of one part by volume with ten parts by volume of clean water. The diluted admixture is added to the appropriate dry cement/sand mixture. The mortar shall be produced in such quantities that will be used within one hour after mixing. The finished plasterwork shall be of an even and smooth towel surface finish.

When dry, apply two coats of an approved water dispersed epoxy resin coating to the plastered surfaces of the walls that are to be painted.

BD 03.01.04 External plastering

The Engineer shall mark out areas that need to be renovated. The Contractor shall neatly cut with an angle grinder in straight lines the edges of the poor patches of plaster that must be removed.

The substrate of the brick walls must be prepared to be sound, free from cement grout, laitance, loose or segregated material, voids or flaws and substances that might interfere with the bonding of the new plaster.

The surface must not be powdery or crumbly, and must exhibit adequate tensile strength. The preparation work can be done by means of chipping away with a chisel, steel-wire brush and angle grinders to the satisfaction of the Engineer.

Smooth surfaces must be chipped to provide mechanical bonding for new plaster. Before plastering commences the substrate must be well wetted with clean water.

Only approved ready-mixed or pre-mixed bagged plaster mortar with 5 MPa compressive strength or approved equivalent may be used for plastering. The Contractor shall submit the design mix with the volume of water to be added to the mortar mix for approval by the Engineer. An approved bonding agent must be added to the mortar mix.

The mortar shall be produced in quantities that will be used within one hour after mixing. Care shall be taken not to mix old mortar into any new batch.

The finished plasterwork shall be of an even and smooth wooden trowel (surface finish with rounded edges at sharp corners) to the satisfaction of the Engineer. The plasterwork shall be cured for seven days by any approved method to prevent loss of moisture.

Three (3) test cubes per sampling shall be taken at a frequency for every 15 m² plaster area. Cube moulds for nominal size 100 mm complying with the requirements of SANS Method 863 must be used. Final instructions for sampling, moulding, cutting and testing will be issued to the Contractor on site.

BD 03.01.05 Rough-cast plaster

Rough-cast plaster shall be applied in two coats. The undercoat shall be composed of one part cement and five parts sand finished with a wooden float. The finishing coat shall be composed of one part cement and three parts stone aggregate that will pass through a 4 mm sieve. The finishing coat shall be flicked on with a machine before the undercoat has set to obtain an even texture to match the existing rough-cast plaster.

Where the undercoat has already been plastered, the undercoat shall be prepared to receive the finishing coat. The surface of the undercoat plaster shall be chipped adequately to form a key and wetted before the finishing coat is applied.

BD 03.01.06 Fine rough-cast plaster

Fine rough-cast plaster shall be as for rough-cast plaster but the finishing coat shall be composed of one part cement and three parts coarse sand.

BD 03.01.07 Internal plastering

The surface of internal plaster shall be steel trowelled to a smooth, even and true finish. External plaster shall be finished to a true and even surface with a wood float. All plaster surfaces shall be free from blemishes, cracks, blisters or other defects. Plaster shall return into reveals and soffits of openings, and all angles shall be true and straight with salient angles slightly rounded.

Plastering of a surface shall be executed in one operation, as no joint marks will be allowed. Plaster on walls shall not be less than 12 mm or more than 20 mm thick and plaster on concrete shall be not less than 10 mm or more than 15 mm thick, except where specifically specified otherwise.

Only approved ready-mixed or pre-mixed bagged plaster mortar with 5 MPa compressive strength or approved equivalent may be used for plastering. The Contractor must submit the design mix with the volume of water that will be added to the mortar mix to the Engineer for approval.

BD 03.02 PARTITIONS

All internal non-load-bearing walls shall be inspected and the Engineer shall determine whether partitioning such as laminated plastic particleboard, polyester painted steel, vinyl clad gypsum panels or any other demountable partitioning should be replaced.

Where partitioning must be relocated or replaced, such new partitioning shall be non- combustible, provide acoustical privacy and comply with SANS 10400.

All new partitions shall assemble into a rigid structure and all units shall be readily removable from either side without disturbing adjacent units.

All exposed trims for doorframes, glazing and skirting are to be of aluminium, or alternatively be painted in accordance with Technical Specification BJ: Paintwork.

The type of boarding and jointing or cover strips shall be in accordance with the Schedule of Quantities.

BD 03.03 WALL CRACKS

Wall cracks shall be evaluated to determine the nature and severity of the occurrence of the cracks. The Engineer shall inspect all plastered and unplastered walls and identify the underlying factors causing cracks. Repairs shall be carried out in accordance with the Particular Specifications.

BD 03.04 FACE BRICKS

Face bricks shall be inspected for dirt, efflorescence, staining, oil, paint, lichens and mosses, water, smoke and soot, rust, or damage caused by chemical reaction.

Where efflorescence appears, light brushing and hosing down with clean water is recommended for most cases. The brickwork must be saturated with clean water before applying any chemical and washed down with clean water afterwards. Cleaning can also be achieved with scrubbing, water jetting with cleaning agents and soaps, etc. Staining caused by non-water-soluble salts, such as vanadium, manganese and iron, shall be treated as follows:

(a) Remove vanadium staining by washing the wall with a solution of 100 g to 1 litre of water using caustic soda. (Use the corresponding secondary potassium salts where available, as these will be less likely to cause visible secondary efflorescence.) If secondary efflorescence occurs, wash it off with clean water.

(b) Manganese stains must be removed using proprietary brand chemical compounds based on hydrochloric acid with modifiers and sodium fluoride. These solutions should be applied using full strength as recommended by the manufacturer.

(c) Where rust/iron stains occur, wash the affected area with a solution of 50 g oxalic acid, 20 g sodium fluoride, 15 g citric acid in 1 litre of fresh, clean water. Apply the solution to a dry wall and leave it on the wall until the stain has dissolved. Wash down using a solution of 50 g bicarbonate of soda in one litre of water.

External environmental stains and smears caused by soot, smoke, industrial pollution and spillage of oil, paint and other compounds, including micro-organic growths such as fungi, lichens and mosses on brickwork, must be identified and dealt with in an appropriate and approved way.

Care shall be taken to test the effect of some of the chemicals and compounds for possible harmful effects on the colours of the brickwork and on adjacent materials, as well as for possible toxicity to human, animal and plant life. All cleaning procedures shall be carried out with full knowledge of all the potential dangers to human and animal health, and the appropriate safeguarding and precautionary measures shall be put in place.

BD03.04.01 APPLICATION OF SILANE / SILOXANE BASED WATER REPELLENT/IMPREGNATION

The surface to be treated shall be clean, sound and dry. It should be free from dust, dirt, loose particles and oily or greasy deposits.

The surface shall be dry to allow maximum penetration. No application shall be made for at least four days after rain.

In order to remove any loose particles, the walls shall be pressure-cleaned with water before application of the silane / siloxane based water repellent. After pressure cleaning of the walls, the walls shall be left to dry in sunny conditions for at least 4 days, and where dagha (cement) has come loose in the joints and left a void, dagha (cement) joint filling shall be prepared to match the existing colour and shall be replaced to match the existing. The Contractor shall submit a mix design of the dagha (cement) joint filling for approval before application.

The contractor shall arrange for walls to be inspected by the Engineer's Representative before application of the water repellent, but after pressure cleaning of the walls.

The water repellent should be applied by brush or through a low pressure knapsack sprayer. Application should commence from the highest point of the surface and work down the surface. Some run-down of the coating is permissible but should not exceed 250-300 mm. A second coat may be given but only after at least two hours drying time between coats.

Avoid working in full sunshine to achieve maximum penetration. Confine activities to the shadow side of the structures.

Application temperature shall be +/- 5o to +30o, and shall not be applied if rain is imminent.

The penetrating silane / siloxane based water repellent shall be applied to cover 3 – 5 m2 per litre per coat. The water repellent shall be applied in two coats.

The penetrating silane / siloxane based water repellent shall be applied in accordance with the instructions of the supplier.

BD 03.05 WALL TILING

BD 03.05.01 General

Tiling shall comply with the requirements of SANS Standard Specification 22 and section 15 of OW 371. The code of practice for the fixing of glazed wall tiles, SANS 10107 and the recommendations of the South African Ceramic Tile Manufacturer's Association (SACTMA) must be adhered to.

All tiled areas must be checked for damaged surfaces or to determine where tile adhesion to subsurface proves to be of non-satisfactory standard. In cases where tiled surfaces need to be redone, proper care shall be taken in removing all damaged tiles, as well as any adhesive remains on the subsurface.

Matching of existing size and colour should be pursued wherever possible.

BD 03.05.02 Glazed wall tiling

White glazed tiles 150 x 150 x 5 mm thick, first grade, must be laid in a cement-based powder adhesive, strictly in accordance with the manufacturer's specification. Drying periods for backgrounds and substrates must be strictly adhered to. All tiles must be correctly bedded. This can be achieved by using a 6 mm square notched wall trowel to spread the fixative to the required thickness of 6 mm. Bed the tiles dry and move them firmly into position, ensuring that they are in proper overall contact with the bed and form an even surface.

A minimum of 2 mm grouting joints shall be allowed between tiles. Under no circumstances should the tiles be butt-jointed. Do not fill joints between tiles until at least 24 hours after the tiles have been bedded. Ensure that the joints are free of tile adhesive residue and any foreign matter. Fill joints with waterproofed white cement. Existing joints must be cleaned and refilled with new white cement.

BD 03.05.03 Ceramic wall tiling

Glazed ceramic wall tiles 230 x 115 x 11, 5 mm thick, with grade 1 acid resisting quality finish are to be used. Apply an approved epoxy grout into the tile joints and finish off with a wetted nosing tool to a smooth glazed finish. Ceramic tiles include special tiles, such as bull nose and corner tiles. Repairs include replacing damaged tiles and pointing between tiles with an approved epoxy grout.

BD 03.05.04 Corner protectors

Install 75 x 75 x 5 mm thick aluminium angle corner protectors to external vertical wall corners for protection with 8 mm diameter impact nails x 80 mm long @ 300 mm c/c to a maximum height of 1,6 m. Seal the interface gap with approved silicone.

Install for abattoirs and dairies 75 x 75 x 3 mm thick stainless steel grade 304 angle corner protectors, polished to a No 2B finish with a grit 180, to external vertical wall corners. Fix the corner protectors with 8 mm diameter impact nails x 80 mm long @ 300 mm c/c to a height of 1,8 m. The interface gap must be sealed with an approved polyurethane sealant.

BD 03.05.05 Expansion joints

Expansion joints for glazed wall tiling shall be provided at 3,5 m centres maximum (vertically and horizontally). The joints shall be 5 mm wide. Prepare the joints by cleaning them thoroughly. The joints shall be primed and sealed with an approved one component 5 x 5 mm white polyurethane joint sealant.

Expansion joints for ceramic wall tiling shall be provided at 4 m centres maximum (vertically and horizontally). The joints shall be 10 mm wide maximum. Prepare the joints by cleaning them thoroughly. The joints shall be primed and sealed with approved one component 10 x 10 mm white polyurethane joint sealant.

BD 03.06 WINDOWS

BD 03.06.01 General

All windows shall be inspected to assess the level of workability, paying special attention to hinges, handles, stays, catches, etc. Should any window be found unsuitable due to damage to the frame, opening section or any other part thereof, such window shall be replaced.

The Engineer shall take great care to make sure that the appropriate waterproofing details are applied strictly to ensure adequate protection against any water penetration.

BD 03.06.02 Steel windows

The Engineer shall inspect for any deficiencies in residential and industrial type steel windows and cell windows. Where necessary, windows shall be serviced and repainted in accordance with Technical Specification BJ: Paintwork.

BD 03.06.03 Burglar bars to steel windows

Where manganese bars are incorporated in the fixed mullions of the windows, this shall be done in such a way that the bars are not wider apart than 15 cm/centre. The bars shall have at least a section of 30 x 16 mm, penetrating at least 100 mm in the lintels and sills. Heavy duty burglar bars shall be 15 mm diameter or 12 mm square. Loose burglar bars shall be site welded to the window frames.

BD 03.06.04 Timber windows

All wooden windows are to be inspected and treated according to the condition of the timber as stipulated in Technical Specification BJ: Paintwork.

BD 03.06.05 Aluminium windows

When working with mortar or plaster great care shall be taken to protect all aluminium sections from staining by applying a film protector or motor oil on the aluminium surface.

BD 03.07 GLAZING

BD 03.07.01 Glass

Cracked and broken glazing shall be replaced. The glazing and fixing of glass in buildings shall be carried out strictly in accordance with SANS Code of Practice 0137.

BD 03.07.02 Putty

Care shall be taken to remove all chipped, flaked or damaged putty. The Engineer shall indicate on site which putty must be replaced.

All new putty shall comply with the requirements of the SANS Standard Specification 680. The putty shall be delivered on the site in sealed containers marked with the SANS mark.

Type I putty as specified shall only be used for glazing in wood sashes and Type II only in steel sashes.

Paintwork on putty shall not commence until putty has properly dried out, which may necessitate the addition of an accelerating agent. The Contractor shall therefore take programming of trades in Port of Entry areas into consideration.

BD 03.08 DOORS

BD 03.08.01 General

All existing doors shall be inspected for the general condition and integrity of hinges, locking mechanisms, etc.

All steel doors shall comply with the requirements of SANS Standard Specifications 727 and 1129 and section 13 of OW 371.

All new external doors are to be fitted with 1½ pair heavy duty hinges.

Door signage, such as door numbers, etc, shall be in accordance with Technical Specification BH: Fittings, and the Schedule of Quantities.

Special attention shall be given to the condition of striker plates and hinges that need to be replaced, or properly secured where possible. Doors shall be painted to the requirements of Technical Specification BJ: Paintwork.

BD 03.08.02 Doors, sidelights and fanlights

All wooden stock doors shall comply with the requirements of SANS Standard Specification 545 and section 8, clauses 8.33 and 8.34 of OW 371.

BD 03.08.03 Flush doors

The Contractor shall inspect all doors, internal and external. Where any door needs to be replaced, such door shall be a 40 mm thick solid laminated door as specified for interior or exterior use and shall be capable of withstanding the raking, deflection, puncture and moisture resistance tests for the desired application.
Unless otherwise specified, face veneer shall be rotary cut, and shall be of the timber specified, or where doors are to be painted, shall be of timber suitable for painting. Painting shall be done in accordance with Technical Specification BJ: Paintwork, and the Schedule of Quantities.

Edge strips for concealing the vertical edges of doors shall be of the same timber as the face veneer and for single doors and hinge edges of double doors not be less than 10 mm thick, and for rebated meeting edges of double doors not less than 20 mm thick. The top and bottom edges of doors showing end grain shall be sealed with lacquer or other suitable material if the edges were disturbed in any way.

BD 03.08.04 Toilet doors in ablutions

Doors showing signs of erosion due to water penetration shall be either replaced or cut short 150 mm from finished floor level. If the existing semi-solid door panel is to be retained, it should be cut short 150 mm from the floor level. A 38 x 50 mm SAP insert must be glued and nailed in at the bottom edge. The steel frame must also be cut short and filled in with grout at the cut edges and fixed to the wall with 2 x 8 mm diameter heavy duty impact nails.

BD 03.09 IRONMONGERY

BD 03.09.01 General

All ironmongery shall comply with the requirements of section 11 of OW 371. All ironmongery shall be approved by the agent/representative before fixing. Articles shall be fixed with screws of similar metal and shall be eased, oiled, adjusted and left in perfect working order on completion.

All ironmongery shall be inspected to assess the level of workability, paying special attention to door handles, locks, door closers, door stops, door catches, fixing of these fittings, etc. Should any of these fittings be found unsuitable due to damage, corrosion, etc, they shall be replaced. Where existing holes in wood are worn out, these holes must be plugged with wood to receive the screws.

Toilet doors in ablutions must be fitted with approved D-type natural anodised aluminium pull handles and 150 x 150 mm plate. Install 15 mm diameter concealed steel roller ball catch with chromium-plated striker plate with circular hole for roller ball catch. Fix this plate to door frame with two aluminium pop rivets.

BD 03.09.02 Door locks

Each lock shall be provided with two keys and no key shall pass a second lock. All mortice locks, mortice latches and night latches, rim and cylinder rim night latches, and escutcheon for locks shall comply with the requirements of the SANS. The Contractor shall supply all screws, etc, required for completion of the work.

BD 03.09.03 Cupboard doors

Where required according to the Schedule of Quantities, built-in cupboard doors in sleeping quarters are to be provided with 2 x angle iron sections of 35 x 80 x 3 mm thick x 10 mm diameter hole for a padlock that must be fixed to the inside of the cupboard door.

Locker doors shall be provided with a 50 x 50 x 5 mm thick mild steel angle x 10 mm diameter hole for a padlock site welded to the locker.

BD 04 DETAIL OF REPAIR WORK

The detail of the work is described in the Schedule of Quantities.

BD 05 MAINTENANCE

No maintenance will be required for walls under this contract.

BD 06 MEASUREMENT AND PAYMENT

BD 06.01 MEASUREMENT AND RATES

BD 06.01.01 General inclusion of costs and specifications

Notes:

Where applicable, standard SANS 1200 measurement and payment items shall be used for Earthworks (Small Works) (1200 DA), Site Clearance (1200 C) and Concrete (Structural) (1200 G).

All material scheduled to be removed shall be deemed to be existing damaged materials in small or large sections. All such redundant material shall become the property of the Contractor and must be removed from site immediately.

All new material shall be deemed to be in patchwork and shall be of approved equal quality, colours, profiles, thickness, etc and shall in all cases match the existing materials and shall be fixed (internally or externally) to existing material, frames or surfaces.

All replacement, removal and repair work shall be done carefully as to not damage any adjacent or other material or work. Any damage to other or adjacent materials or areas caused by the negligence of the Contractor shall be repaired by him free of charge.

All work scheduled to be replaced shall be deemed to include for the careful removal of the damaged existing material as a whole or partly, as specified, for the cleaning and preparation of the remaining surface(s), frames, etc as well as for the new material scheduled or specified to replace the damaged material.

All work scheduled to be removed, hacked off, or taken out shall be deemed to include the cleaning and preparation of the remaining surfaces, areas where material were removed, or remaining work to receive new material or work specified.

Repair and service work shall also include all removing, cutting, grinding, cutting into, welding, bending, strengthening, drilling, tightening, fastening, oiling, greasing, adjusting and providing missing or damaged screws or bolts, etc to repair and service or to improve the items or areas as new and to match the existing. The servicing of windows will be measured in number irrespective of the type of window or the amount of opening sashes present in the overall window size. The rates tendered for servicing of windows or similar items shall be deemed to include for servicing all opening sashes and the total overall frame. The rates tendered for servicing of doors or gates shall include the service of all locks, handles etc.

Work scheduled to be realigned and refixed shall be deemed to include all necessary new additional materials, brackets, connector plates, bolts, pip rivets, nails, screws, spacer blocks, clamps, timber, and labour, etc to leave the items as new and totally functional.

All new work are measured net and shall include all cutting, lapping, waste, bending, fixing, corners, mitres, fixing screws, pip rivets, nails, adhesive, grout, putty, etc, as well as cleaning and preparation of surfaces not already prepared as part of removed items, etc. The supply and installation of new window handles, pegs, stays, etc as well as the service of windows shall include for sealing all bolts and screws of handles, stays, etc with epoxy after fixing or tightening into positions.

The removal of doors, gates or windows shall include for the removal of all existing locks, handles, striking plates, etc but exclude the hinges, etc, which shall be used for the new replaced items. All repair work (excluding paintwork) around and in the thresholds of new door frames, gates or windows build into existing brickwork in new or existing positions shall be deemed to be included in either the rates tendered for the new replacement item or the removal payment item of the frame, window, etc.

The new doors to toilets and wet areas as specified shall be fitted with rubber door stops, D-profiled pull handle and backplate sets, 15 mm roller ball catches with striking plates and all other ironmongery needed to install the doors complete. All new ironmongery shall be measured and paid for separately.

The new doors to offices, etc, as specified shall be fitted with rubber door stops, 4 lever mortice locksets with handle sets to match existing, striking plates and all other ironmongery needed to install the doors complete. All new ironmongery shall be measured and paid for separately.

All ironmongery installed on the project shall bear the SANS approved trademark and codes. Samples of all ironmongery scheduled must be according to the samples of the Department of Public Works and samples must be handed to the engineer for approval before ordering the material.

All brickwork shall include for damp proofing membranes, galvanized brickwork reinforcement to every third course, wire ties and wall anchors as needed.

Tile work to walls shall include all cutting, spacers, waste, jointing, mitres, corners, epoxy grout and joint filler.

Ordering of certain specified material ie NCI industrial type wall tiles needs special and urgent attendance and should be ordered timeously as to prevent any construction delays.

All new glass mirrors shall be silvered float glass copper backed mirrors with polished edges all round and shall, unless otherwise scheduled, be fixed to walls with chromium plated dome capped mirror screws with rubber buffers.

Specification : Repairs to galvanised IBR roofs

Repairs to the workshops and store room roofs will include the following work and all work must be carried out in accordance with the Technical Specification BA: Roof Coverings.

(a) Inspect the roof for defects.

(b) Fasten loose nuts on hook bolts.

(c) Replace damaged and/or severely corroded washers (allow for ± 30% of all washers to be replaced). The remainder of the existing washers must be painted with an approved rust converter and a grey colour pure acrylic paint system.

(d) Insert sealer strips on all loose side laps.

(e) Stitch side laps together with Leak Plugs for IBR roof cladding (2 between every hook bolt; purlins are spaced at approximately 1,86 m c/c).

(f) Install new 0,8 mm thick apex trim at the workshops for the length of each bay size 616 mm girth (286 + 300 vertical + 20 + 10 vertical) with Craft-Lock type apex trim fixing brackets. The apex trim 4 x bend (1 is a shallow bend) and fixed to roof sheeting with stitching screws and washers, and to 260 mm vertical x 140 mm (at slope) x 25 mm wide x 2,5 mm thick with 25 mm lip galvanised bracket. The galvanised bracket to be screwed and fixed to roof cladding in trough with 2 galvanised gutter bolts. The spacing of the brackets is 1029 mm. 150 mm overlap fixed and sealed with 2 rows of pop rivets and 2 rows of silicone. Bend up trough to form dam.

(g) Side wall flashings: Inspect existing flashings. All loose flashings must be sealed with two rows of silicone and stitched together with no.10 stitching screws. Counter flashing to be sealed with silicone in brick wall. Existing sealant to be removed. Prepare groove to manufacturer’s specifications to receive new joint sealant.

(h) Ridge flashings: Inspect existing flashings. All loose flashings must be sealed with two rows of silicone and stitched together with no.10 stitching screws.

(i) Holes (small diameter) in cladding to be sealed with Leak King plugs.

(j) Replace existing galvanised gutters and down pipes with new 125 x 100 x 0,8 mm thick Chromadek gutters with 100 x 100 x 0,8 mm thick galvanized baked enamel rainwater down pipes spaced at approximately 6 to 7 m intervals.

Specification : Repairs to concrete gutter at workshops

(a) The existing ± 305 mm x 400 mm deep concrete box gutters must be waterproofed with a fully bonded waterproofing system to Technical Specification BC: Waterproofing. Prepare the existing cement screed surface by cleaning it and replacing decayed cement screed with new screed. The waterproofing membrane must be dressed over the top ends of the concrete upstand beams of the gutters and down into down pipes. All sharp concrete corners must be chamfered adequately to suit waterproofing membrane requirements.

(b) The existing expansion joints in the box gutter must be cleaned and prepared to receive joint sealant. The edges of the concrete must be chamfered to comply with waterproofing manufacturer's requirements. Insert 35 mm diameter low density, non-cross-linked, closed cell, expanded poly-ethylene foam backing cord for 25 mm wide joint. Prime joint and seal joints with 25 mm wide x 15 mm thick approved poly-urethane joint sealant applied strictly according to manufacturer's specifications. The top surface of the joint sealant must be recessed adequately into joint to allow for a closed cell polyethylene foam strip that will accommodate movement of the waterproofing membrane.

Dressing to expansion joint will comprise of additional strips of reinforced waterproofing membranes that are lapped and sealed to manufacturer's specifications. The Contractor must submit detail for approval to the Engineer prior installation.

Specification : Repairs to roller shutter doors at workshops

(a) Replace the whole bottom T-bar including the bottom ± 17 galvanised slats of the existing roller shutter doors with a new galvanised T-bar (bottom rail) with neoprene weather strip. The Contractor must measure the width of the door (approximately 3000 mm) and the opening width of the wicket door prior ordering the new bottom T-bar and new galvanised slats (± 76 mm high x 1,2 mm thick). When the new bottom T-bar has arrived on site, the Contractor must remove the existing bottom T-bar and slats and slide in the new T-bar and slats.

(b) Provide and insert end locks on the ends of door curtains.

(c) Repairing shall include fixing of missing bracket bolts, screws and pins, brackets, fittings such as locks, loose rachet and pawls, and brackets. Loose bracket bolts that have broken out of walls shall be replaced with 175 mm long x 12 mm diameter threaded rods that must be anchored to the walls with an approved epoxy grout.

(d) Repairing bent and fixing of damaged steel plates of canopy covers.

(e) Repairing gearbox, gear handle, drive shaft, pinions and bevel gears.

Specification: Servicing and adjustments to roller shutter doors

(a) All other door components shall be serviced, adjusted, repaired and replaced, but not restricted to, for the full repair of the complete door installation to a smooth working condition. The door sizes is approximately 3000 mm wide x 3500 mm high. The existing interlocking slats are 76 mm wide.

(b) Servicing shall include cleaning and oiling of hinges, rollers, bearings, gears, channel guides and locks. Interlocking slats of the roller shutter curtains shall only be washed with a high-pressure water jet and detergent to remove all dirt, grease, etc.

(c) Adjusting, fixing and realigning of door guides. The existing channel guides, approximately 76 mm wide shall be bent straight to allow free and smooth movement of the roller shutter door slats. The Engineer shall give the necessary instructions where severely damaged channel guides must be replaced.

(d) Adjusting and balancing torsion springs, barrel collar and counter balance.

Specification : Welding of thin steel plates

Thin steel plates covering the external side of doors must be welded to the door frame members. The existing paint must be removed from the welding areas prior to site welding. A coded or experienced welder must submit the proposed welding procedure to the Engineer for approval. The aim of the site welding is two fold, viz to fix the steel plate to the frame and secondly, to prevent water ingress into the inside of the door. The perimeter of the individual plate sections of the door must be sealed with continuous impervious welds.

Specification : Repairs and replacements

Replace diamond mesh fence:

Existing diamond mesh shall, where indicated by the Engineer, be removed and replaced with new diamond mesh fence. The new galvanized diamond mesh shall be stretched and properly tied to the fencing wire. The diamond mesh or wire netting shall be secured by means of soft binding wire at 1,2 m centres along the top and bottom straining wires and at 3 m centres along each of the other fencing wires unless otherwise specified.

Diamond mesh

(a) Diamond mesh (chain-link) fencing shall comply with the requirements of SANS 1373. The edge-finish shall be both sides clinched or barbed.
(b) The nominal diameter of the wire shall be 2,5 mm and the mesh size shall be 40 mm x 40 mm.

(c) The wire shall be fully galvanized

(d) ……Tensioning fence wires:

All fencing wire shall be carefully strained and hung without sag, and with true alignment, care being exercised not to strain the wire so tightly that it will break, or that end, corner, straining or gate posts will be pulled up. Each strand of fencing wire shall be securely fastened in the correct position to each post with soft galvanised binding wire.

Smooth wire:

(a) Smooth wire shall comply with the requirements of SANS 675 and shall be of the types specified below:

(b) Straining wire shall be 4,0 mm diameter and fully galvanized.

(c) Fencing wire shall be high tensile grade, 2,24 mm diameter wire fully galvanized.

(d) Tying wire shall be 2,5 mm diameter, mild steel, galvanized wire for tying fencing wire to standards and droppers, and 1,6 mm diameter, mild steel, galvanized wire for tying netting and mesh wire to fencing wire.

BD 06.02 SCHEDULED ITEMS

NEW WORK

BD.01 Doors and windows:

(a) (Type of doors, windows, locks, etc and material indicated):

(i) Description of item .....Unit : number

The unit of measurement shall be the number of doors, windows, locks, etc installed complete as specified.

The tendered rates shall include full compensation for the manufacturing and installation of the steel or natural anodised aluminium doors, windows, locks, frames, etc complete with hinges, handles, locks, barrel bolts, retaining devices, door stops, stays and any other work necessary to complete the work as specified, scheduled or as shown on the Drawings. The tendered rates for windows shall also include full compensation for glazing, window sills and damp-proof sheeting as specified or to match existing.

BD.02 Wall panelling:

(a) Description of material to be used:

(i) Description of item and/or position to be fixed ..... Unit m, m^2, number

The unit of measurement shall be the number, metre, etc for each item as scheduled.

The tendered rates shall include full compensation for all costs of material, waste, labour, plant, transport, delivery, access, scaffolding, fuel, etc to install the material as specified and to match the existing to the Engineer's approval.

BD.03 Joinery:

(a) Items measured by number:

(i) Doors, etc (type and size indicated).....Unit: number

(ii) Etc for other items measured by number

(b) Items measured by linear metre:

(i) Skirtings, etc (type and size indicated) .....Unit: m

(ii) Etc for other items measured by length

(c) Items measured by area:

(i) Eaves covering, etc (type and thickness indicated).....Unit: m^2

(ii) Etc, for other items measured by area

The units of measurement shall be the number, metre or square metre of each type and/or size of joinery item specified.

The tendered rates shall include full compensation for the supply of all materials, manufacture, cutting, waste, fixing and installation of the joinery items.

BD.04 **Ironmongery, steelwork, glass, wall finishings, etc:**

(a) Measured by number:

(i) (Description of item).....Unit: number

(ii) Etc

(b) Measured by linear metre:

(i) (Description of item).....Unit: m

(ii) Etc

(c) Measured by area:

(i) (Description of item).....Unit: m^2

(ii) Etc

The unit of measurement shall be the number, metre or square metre as applicable to each item.

The tendered rates shall include full compensation for manufacturing, providing and installing each item to new or existing steel, wood or plaster complete as per specifications, drawings, descriptions as scheduled or as the existing and shall include for all labour, material, waste, plant, transport, delivery, access, scaffolding, fuel, etc to the Engineer's approval.

ALTERATION WORK

BD.05 **Alterations and repairs to existing structures:**

(a) Indicate if repairs, replace, alterations, removal or sealing, etc:

(i) Description of individual items to be repaired, altered, removed, sealed, etc.....Unit: m^3, m^2, m, number

The unit of measurement for items repaired, replaced, altered, removed, sealed, etc shall be the cubic metre, square metre, metre or number for each item as scheduled.

The tendered rates shall include full compensation for all costs to repair, replace, refix, remove, cutting into, re-align, taking off, temporary store, etc as specified in the Standard and Technical Specifications and shall allow for all necessary labour, plant and new material needed to do the specified work and to leave the scheduled items as new and to the approval of the Engineer. Refer also to the general inclusion of costs in BD 06.01.01.

TECHNICAL SPECIFICATION

BE FLOORS

CONTENTS

BE 01 SCOPE

Floors shall mean the scope of work to maintain materials and components such as removal of existing floors and installation of new floor coverings, skirtings, screeds, concrete floors and paving. This specification does not include work related to metalwork and paintwork, which are specified elsewhere.

This specification covers the removal of existing floor coverings, screeds and concrete surface beds, the repair of existing floor coverings, screeds and concrete surface beds. This specification also covers the supply, delivery and installation of new floor coverings, screeds and concrete surface beds for various types of buildings.

The complete scope of repair work shall as described in BE 04: Detail of repair work.

BE 02 STANDARD SPECIFICATIONS

BE 02.01 GENERAL STANDARD SPECIFICATIONS

The latest edition, including all amendments up to date of tender of the following specifications, publications and codes of practice shall be read in conjunction with this specification and shall be deemed to form part thereof:

SANS	281	-	Hardwood block and strip flooring
SANS	581	-	Semi-flexible vinyl floor tiles
SANS	786	-	Flexible vinyl flooring
SANS	978	-	Wood mosaic flooring
SANS	10070	-	The laying of thermoplastic and similar types of flooring
SANS	10043	-	The laying of wood floors
SANS	10186	-	The laying of textile floor coverings
SANS	1449	-	Ceramic wall and floor tiles

BE 02.02 ADDITIONAL SPECIFICATIONS

Technical Specification BF: Structural concrete Technical
Specification BG: Metalwork

BE 02.03 OCCUPATIONAL HEALTH AND SAFETY

The Contractor shall be required to comply with the Occupational Health and Safety Act 85 of 1993, Construction Regulations 2014 and related regulations. Non- compliance with these regulations, in any way whatsoever, will be adequate reason for suspending the Works.

BE 03 VARIATIONS AND ADDITIONS TO STANDARD SPECIFICATIONS

BE 03.01 ADDITIONAL REQUIREMENTS FOR REPAIR OF FLOORS

BE 03.01.01 Floor coverings

Existing floors shall be inspected to determine the extent of any damaged floor areas. The existing floors and other building elements shall be protected from damage during the progress of any repair work and on completion shall be cleaned and handed over in a perfect condition. Only skilled workmen experienced in laying any type of floor finishes shall carry out the work.

BE 03.01.02 Preparation of floor slab and surface beds for new floor screeds

The existing concrete screed shall be removed in patches designated by the Engineer.

All laitance on the surface of the existing surface bed must be removed completely. Mechanised plant such as scabblers or abrasive blasters must be used. The Contractor shall take all necessary precautions to keep dust pollution to a minimum inside the building during the breaking out and removing of existing concrete screeds, as well as during the preparation of the existing concrete surface bed.

After the mechanical cleaning of the slab surface to expose the coarse aggregate, all dust and debris must be removed, and the surface must be thoroughly wetted and kept wet for at least 12 hours before application of the new concrete screed.

BE 03.01.03 Surface preparation of existing floor screeds for new floor coverings

The following procedure is suggested where vinyl tiles were laid with bitumen adhesive:

(a) The Engineer will specify the where existing vinyl tiles are to be removed.

(b) The bitumen must be removed mechanically and/or chemically. Remove as much bitumen and other contamination as possible by scraping. Bitumen can be heated to soften it.

(c) Sweep or vacuum sub-floor thoroughly to remove dust and grit.

(d) An approved solvent based degreasing and cleaning compound can be used to remove the bitumen chemically. The Contractor shall ensure the safety of the workers and the building against possible fire.

(e) The concrete surface must be smoothened. Even the surface with Pavelite or approved equivalent before laying the new vinyl tiles. The Pavelite must be applied in accordance with the manufacturer’s specifications.

(f) Vacuum clean the floor surface again before the adhesive is applied to lay the vinyl tiles.

BE 03.01.04 Cement screed

The Engineer shall determine which existing cement screeds are to be replaced. The cement screed shall have a maximum thickness of 30 mm. Where required the cement screed shall be modified with an approved alkali compatible acrylic emulsion by preparing the cement screed with a mixture of the latex and water in the required ratio.

Before the new screed is applied, remove all surface water from the slab. Apply a bond coat to the slab/surface bed, consisting of a 1:1 mix of cement and clean fine sand with just enough water to provide the consistency of slurry. Mix in equal parts an approved alkali compatible acrylic emulsion specially modified for use in cement mortars with water and add Portland cement to form the slurry. Spread the bond coat evenly using a stiff fibre brush. Do not leave standing pools. Place screed in good time (before the bond coat dries out). The screed must be laid and compacted in one layer.

Curing should commence as soon as the finishing operations have been completed and should be continued for at least 7 days. The Engineer must approve the method of curing.

Joints must be formed in the screed at all existing contraction and expansion positions, as well as at intermediate positions at 3 m spacing maximum.

BE 03.01.05 Concrete screeds

(a) General

Concrete screeds shall have a minimum thickness of at least 50 mm. The Engineer shall determine the areas of which the concrete screeds need to be replaced.
Only ordinary Portland cement, CEM 1 42,5 in accordance with SANS ENV 197-1, shall be used.
Coarse aggregate maximum size: 10 mm 28-day cube strength: 35 MPa.

The use of an approved plasticizer is recommended to reduce the water content of the mix to the absolute workable minimum.

The mix design must be submitted to the Engineer in advance for approval.

Four sets of six test cube samples shall be taken for every factory for the testing of the compressive strength of the concrete.

(b) Concrete floor hardener

Concrete natural non-ferrous aggregate floor hardeners shall strictly be applied in accordance with the manufacturer's specification and under his supervision. Note: The Contractor shall furnish a certificate of compliance, together with a written guarantee after completion.

(c) Compressive strength

At 7 days: 50 MPa
At 28 days: 70 MPa
All other aspects of the construction of new concrete screeds shall be adhered to as specified in Technical Specification BF: Structural concrete.

BE 03.01.06 Laying of material (ceramic excluded)

The laying of vinyl and similar flooring material in tile and sheet form and the fixing of plastic skirtings, nosings, etc, shall be carried out in accordance with SANS 1043.

The laying of wood block and wood mosaic flooring shall be carried out in accordance with SANS 1043.

The laying of textile floor coverings shall be done in accordance with SANS 10186.

Vinyl floor tiles shall be laid with continuous joints in both directions. Tiles shall be cut with a "jointer" at saw and expansion joints. Tiles laid over these types of joints will not be permitted. Only latex-resin type adhesive shall be allowed to glue tiles to the concrete screed or surface bed.

BE 03.01.07 Granolithic screed finish

Granolithic screed finish to floors, treads of steps, thresholds and similar surfaces, unless otherwise specified, shall not be less than 25 mm thick. The granolithic screed shall be composed of three parts granite, or other approved hard stone chips, or approved hard, coarse sharp washed granitic or quartzite sand, half part clean sand and one part of cement, hand or mechanically trowelled to a true and smooth surface. No dry cement powder, grout or wet slurry mix shall be applied to the surface.

New granolithic screed shall be laid before the concrete surface bed or floor matures in order to allow for proper binding. If this is not possible, then the top of the surface bed or floor shall be hammered, chipped and then cleaned with a wire brush and a coat of neat cement grout applied immediately before the granolithic is laid.

The granolithic shall be laid in panels not exceeding 6 m² in area and jointed to lines of panels with V-joints. The joints between the panels shall coincide with joints in the concrete surface bed or floor.

Granolithic finish to stair risers, sides of curbs and other vertical surfaces shall, unless otherwise specified, not be less than 12 mm thick.

All granolithic work shall be done by experienced workmen only and shall be protected from damage caused by rain or other extreme weather for 12 hours after being laid. Protection shall be provided against too rapid drying whilst hardening by means of covering with wet sacks or other suitable material. The screed shall also be protected from damage and discoloration during the progress of the remaining work.

Edges of granolithic floor butting against different floor finishes and edges of margins, etc, shall be true and sharp, and shall be protected by fixing temporary wood strips which shall remain in position until the laying of the adjoining floor has commenced.

Where a non-slip granolithic floor finish is required, the granolithic shall be laid as specified above. Alundum grit shall then be sprinkled over the surface at the rate of 1 kilogram per square meter, lightly tamped in and allowed to set.

BE 03.01.08 Vinyl floor finishes

Existing floors should be inspected and where vinyl tiles need to be replaced, such tiles shall comply with the requirements of SANS 786, and be 300 x 300 x 2 mm thick unless otherwise specified. The flooring shall be of marbled pattern and of an approved colour (to be specified by the Engineer).

Vinyl floor tiles or sheets shall be laid with an adhesive recommended by the manufacturer. All the preparation and work in connection with the laying and fixing of the specified flooring and vinyl skirtings shall be done in accordance with SANS 1070 and to the satisfaction of the Engineer.

The flooring shall, where necessary, be cut and neatly fitted against adjoining floors, thresholds, etc. Where required the Contractor shall carefully remove existing timber floor skirtings and/or quarter rounds for re-use where vinyl tiles are laid against walls. Reinstate skirtings and/or quarter rounds.

Vinyl floor tiles shall, unless otherwise specified, be laid with continuous joints in both directions and vinyl floors shall, unless otherwise specified, be in standard widths with cut sheets at sides of floors as necessary, all to the entire satisfaction of the Engineer.

The vinyl flooring and skirtings shall be covered up and protected from damage during the progress of remaining work and on completion be cleaned and, unless otherwise specified, polished with the type of polish recommended by the manufacturer of the vinyl flooring.

BE 03.01.09 Skirtings

Loosened hardwood skirtings must be cleaned and where necessary removed and/or replaced by 76 x 19 (or 25 mm) mm thick hardwood skirting with one rounded top edge plugged to the wall. Painting shall be in accordance with Technical Specification BJ: Painting.

In selected areas skirtings shall be 100 mm high x 6 mm thick unglazed ceramic tiles glued to walls with an approved cement grout. The Engineer shall specify these areas.

Vinyl cove skirtings shall be of approved manufacture and colour and, unless otherwise specified, be 70 mm high.

BE 03.01.10 Sealing of vinyl flooring

The newly laid tiles shall, after four days, be scrubbed with a diluted neutral detergent/stripper complying with SANS 825 and rinsed thoroughly. After the floor has dried, apply two coats polymer/acrylic sealer combination containing a minimum of 22 % solids using an applicator pad. Ensure that the surface has set hard before allowing traffic on the floors.

BE 03.01.11 Wood block floors

(a) Replacement of wood block floors

Where required, wood blocks that must be replaced shall, unless otherwise specified, be Clear Grade, Class H with nominal sizes of 75 mm wide, 225 mm long and 20 mm thick, and shall comply with the requirements of SANS 281. Wood blocks that are loose must be re-laid using an approved hot or cold adhesive after the old bitumen has been removed and the surface prepared.

The moisture content of the blocks shall be as specified in the above-mentioned specification, and the blocks shall be treated with timber preservative as specified. The blocks shall, unless otherwise specified, be laid to a basket pattern with an approved hot or cold adhesive and shall be sanded on completion all in accordance with the SANS Code of Practice, SANS 1043 and to the satisfaction of the Engineer

Wood block floors shall be covered up and protected from damage during the progress of the remaining work, and unless otherwise specified, a sealer shall be applied to the final sanded surface and then polished all in accordance with the above-mentioned Code of Practice.

(b) Partial repairs to parquet floors

Only severely loose wood blocks identified by the Engineer shall be repaired. The Contractor shall carefully remove the wood blocks for re-use. Scraping and any other suitable means shall be used to remove the old bitumen. The concrete surface bed or cement screed shall be cleaned from dust and bitumen residue as specified in BE 03.01.02. If the concrete or cement screed is in a poor condition, the poor patches shall be removed according to BE 03.01.04. The Contractor will be allowed to use rapid hardening cement grouts to reduce drying time of concrete and cement screeds in order to suit the working programme. The screeds must be laid at such a level as to enable the workmen to lay the cleaned wood blocks at the same level as the surrounding wood flooring blocks.

The cleaned blocks shall be laid in a basket pattern (or the same existing pattern) with approved hot or cold bitumen at the same level as the surrounding blocks. Missing blocks must be replaced.

BE 03.01.12 Sealing of timber floors

Existing timber floors must be mechanically belt-sanded to remove all traces of existing sealer in strict compliance with SANS 1043. Where necessary, existing flooring, skirtings and quarter rounds should be temporarily removed. Before applying the new wooden floor sealer, ensure that the surfaces are dry, sanded smooth and free from varnish or oil. Vacuum the dust from the prepared floor surfaces.

Apply three coats of clear, lead free wooden floor sealer with preservative and anti- fungicidal properties according to the manufacturer's specification.

Apply the first coat until an even glossy, wet surface is achieved. Leave to dry thoroughly. Apply at least two other coats in the same way, and finally a fourth and final coat. It is proposed that the Contractor first do a trial section to satisfy himself that he can handle this procedure. The final appearance of the wooden floor must be smooth and have a uniform non-gloss finish.

Reinstate skirtings and quarter rounds.

BE 03.01.13 Tiling (general)

Tiles shall be solidly bedded and jointed in cement mortar and, unless otherwise specified, joints shall be 6 mm wide.

The joints in all tiling are to be continuous in both directions. The pointing is to be carried out by well pressing in half-dry cement mortar. Under no circumstances may liquid cement grout be used for pointing.

All tiling shall be properly covered and shall be protected against any possibility of staining, discolouring or any other damage.

At completion, all tiling is to be exposed, checked for damage, repaired where necessary and cleaned off with soft soap and cold water and left in a perfect condition. The application of oil on tiling is not allowed.

BE 03.01.14 Ceramic and quarry floor tiles

(a) General requirements

The Engineer shall determine which tiles need replacement. The existing floor screed and floor tiles must be removed in patches and/or areas as determined by the Engineer.

Ensure that the base for floor tiling is rigid, stable and level unless required to have a fall in one or more direction(s). The surface preparation and cement screed (if required) are described in BE 03.01.03 and BE 03.01.04 respectively. When proprietary brand adhesives are being used for fixing ceramic floor tiles it is essential that the surface to which the tiles are to be fixed is clean, dry, flat and true.

Lay approved unglazed ceramic split floor tiles (230 x 115 x 11,5 mm thick and of a selected or matching colour) in professional floor grouting with 8 - 10 mm wide joints. The floor grout must be applied with a 10 mm square notched floor trowel evenly over an area not exceeding 1 metre at a time. Setting out must be done correctly. The finished installation must be level plumb and true unless specified otherwise.

Mortar beds for dust-pressed tiles and quarry tiles shall be formed with a slurry of 1:1 cement and clean fine sand to a thickness of about 3 mm on an area not exceeding 1 metre at a time. The joints will be 6 - 8 mm wide depending on the size of the tile.

The tiles must be laid in professional cement-based powder adhesive, strictly in accordance with the manufacturer's specifications. The Code of Practice for the fixing of tiles in accordance with SANS 1449 and the recommendations of the South African Ceramic Tile Manufacturer's Association (SACTMA) shall be followed. Important points to be taken into consideration is are summarised below:

(i) Sufficient time must be allowed between building operations.
(ii) Drying periods for backgrounds and substrates must be strictly adhered to.
(iii) No tiling may commence prior to the prescribed time.
(iv) All tiles must be correctly bedded. The tiles must be properly bedded into a fixative that is spread evenly to the required thickness using a square notched rubber mallet (10 mm for ceramic tiles). Bed the tiles dry and move firmly into position, ensuring that they are in proper overall contact with the bed, and form an even surface.
(v) A minimum of 6 - 10 mm grouting joints must be allowed between extruded and split tiles (3 mm minimum for pressed tiles). Ensure that the joints are free of tile adhesive and any foreign matter.
(vi) Tiling installation: Setting out and finished installation must be done correctly.

(b) Filling of joints

Do not fill joints between tiles until at least 24 hours after the tiles have been bedded. Before applying the joint epoxy grout ensure that the joints are free of tile adhesive residue and any foreign matter. Apply the approved epoxy grout into the tile joints. The finishing-off must be completed with a wetted nosing tool or spatula so that a smooth glazed surface finish can be achieved. Application of the epoxy grout must be done strictly in accordance with the manufacturer's specifications. Finally, the tiles must be thoroughly cleaned.

BE 03.01.15 Movement joints in tiling

(a) General requirements

Movement joints are to be provided in tile work due to moisture expansion, thermal expansion and contraction, and crack control at existing expansion joints in the surface bed.

(i) Provide movement joints in the tile work, screed and bedding down to the concrete surface bed or slab. The spacing of these joints depends on the position of existing joints, column and wall layouts and slab thickness. The maximum spacing of joints should be limited to 30 times the slab (surface bed) thickness or 4,5 m, whichever is the lesser. The length-to-width ratio of tile panels should be limited to between 1,0 and 1,5.
(ii) Provide isolation joints around the perimeter of the floor, around columns, walls and other fixed structural elements.
(iii) Joints shall be aligned with no offsets. Irregular shape tile panels must be avoided. Where included angles are unavoidable, it should be less than 60 degrees.
(iv) The width of the joint shall be 6 mm minimum and 10 mm maximum. Provide an approved closed-cell expanded polyethylene foam joint filler with a hinged temporary blocking piece in the movement joints. The size of the blocking piece must be the same as the joint width.

(b) Joint sealing

The joints shall be prepared and primed prior the application of the joint sealant.

The liquid sealant in joints shall be an approved one part grey polyurethane sealant with a shore hardness of A45 and an elongation of 400 %. The manufacturer's specifications must be strictly followed.

BE 03.02 PAVING

Repairs to paving shall include the improvement of existing paving, drainage channels and the replacement of paving that can not be repaired. Different paving types exist, e.g. concrete, precast paving segmental and regular blocks, bricks and slasto. This specification only covers pedestrian paving around buildings.

The Engineer shall identify the paving areas that are to be repaired. Defects to paving will include but not be limited to the following aspects:

(a) Failure of sub-base material and subsidence of sub-soil due to excessive water erosion;
(b) Broken and severely damaged paving;
(c) Distorted and disturbed paving;
(d) Drainage problems, eg ponding of water on the paving and in drainage channels, incorrect falls, etc;
(e) The omission of edge restraint;
(f) Intrusion of weed or hostile root penetration.

BE 03.02.01 Preparing foundation

If the sub-base and/or sub-grade have failed, this soft and unstable material shall be replaced. Existing paving must be carefully removed and stack for re-use. The new earth filling shall be of inert material, having a maximum plasticity of 10, free from large stones, etc, spread, leveled, watered and compacted in layers not exceeding 150 mm thick to a density of 95% of modified AASHTO density. Cement stabilization to improve the existing sub-grade may be considered to improve the characteristics of the material. The blocks shall be laid true to line, levels and grade on a 25 mm thick layer of approved bedding sand. The bedding sand must not be used to fill hollows in an uneven sub-grade or sub-base surface. Where specified, plastic sheeting must be provided below the bedding sand layer. Refer also to BE 03.02.06.

The Contractor shall be responsible for carrying out all necessary process control tests on the density and moisture content of the completed sub-grade, sub-base, etc, to ensure that the required compaction is being attained.

BE 03.02.02 Laying of segmental block paving

The existing blocks shall be preselected for re-use. Broken and severely damaged paving blocks shall be replaced. New paving blocks shall comply with SANS 1058 Class 30 compressive strength. All blocks shall be laid true to line and level. Care shall be taken to ensure that joint lines are straight and square. The blocks shall have a minimum thickness of 80 mm.

After laying the blocks, the paving shall be compacted by means of vibrating plate compactor with joints between the blocks filled in, after compaction, by sweeping in fine sand. The jointing sand shall have a pass of 1,18 mm sieve and contain 10-50 % material passing the 75 micron sieve. The sand shall be free of all soluble salts or contaminants likely to cause efflorescence or staining.

Areas against curbs, manholes, etc, that require infilling and which exceed 25 % of a full block unit shall be filled with units cut to size using a mechanical or hydraulic guillotine, bolster or angle grinder. Infill areas constituting less than 25 % of a full

block area and are of 25 mm minimum dimension shall be filled with 25 MPa concrete. Smaller areas shall be filled with 1:4 cement mortar.

BE 03.02.03 Laying face brick pavers, precast concrete blocks and slasto

The existing blocks shall be preselected for re-use. Broken and severely damaged paving blocks shall be replaced. All blocks shall be laid true to line and level. Care shall be taken that joint lines are straight and square. Slasto shall be laid in the same pattern to match existing.

After laying the blocks, the paving shall be compacted by means of vibrating plate compactor. Clean the top of the blocks before and after compaction. Thoroughly wet compacted area after compaction and leave 24 hours to dry. The joints between the blocks must be filled in, after compaction, with a 1:4 cement mortar. The joints shall be pointed with a steel tool to a smooth surface finish.

BE 03.02.04 Laying of cast in-situ concrete paving and drainage channels

Severely cracked and/or damaged concrete paving and drainage channels shall be replaced. The Engineer shall indicate which panels and sections of drainage channels are to be removed. Cutting out will be done with an angle grinder or saw cutting machine. Concrete panels must be removed in sizes where the ratio of the sides does not exceed 1:1,5. The foundation material must be improved as specified in BE 03.02.01.

New concrete panels and drainage channels must be cast with a compressive strength of 25 MPa. Concrete paving to the specified thickness must be finished off with a smooth wood trowel surface finish or must match the existing surface finish. Edges must be finished off with a steel nosing tool with a radius of 5 mm. Expansion joints must be provided where specified. Drainage channels must be cast in lengths not exceeding 1 metre. Channels must be finished off to have a smooth steel trowel finish.

BE 03.02.05 Precast concrete edge beams, curbs and channels

Edge restraints shall be installed before paving commences. Edge restraints may be cast in-situ, or consist of precast units. Precast edge blocks shall have dimensions of 75 mm wide x 300 mm deep. Cast in-situ beams with 25 MPa concrete shall have dimensions of 300 x 300 mm and cast in lengths on exceeding 1 meter.

Precast concrete curbs and channels shall comply with SANS 927, generally in 1 meter lengths and finished smooth from the mould on exposed surfaces. Curbs and channels shall be bedded on and jointed in 1:3 cement mortar and pointed with keyed joints. Bases to curbs shall be Class B prescribed mix of unreinforced concrete.

BE 03.02.06 Weed control

Two types of weed killing shall be carried out:

(a) Mixing weed killer to sub-base for rehabilitated paving;
(b) Spraying existing paving excluding concrete paving.

After the base course has been approved and the curbing completed, the prepared base must be treated with a soil applied herbicide with long residual action for the control of broad leaf weeds and grasses, containing active ingredient Bromacil, at a rate of 4 kg/m². Plastic sheeting with a thickness of 375 micron shall be laid to prevent the penetration of grass underneath the segmental paving.

BE 03.02.07 Site clearance

Excess sand and all other debris shall be removed before the pavement is opened to traffic. The site shall be left in a tidy condition.

BE 04 DETAIL OF REPAIR WORK

The detail of the scope of work is described in the Schedule of Quantities.

BE 04 MAINTENANCE

Maintenance requirements will be itemised in the Bill of Quantities and will be instructed to the Contractor.

BE 06 MEASUREMENT AND PAYMENT

BE 06.01 MEASUREMENT AND RATES

BE 06.01.01 General inclusion of costs and specifications

Notes:

Where applicable, standard SANS 1200 measurement and payment items shall be used for Earthworks (Small Works) (1200 DA), Site Clearance (1200 C) and Concrete (Structural) (1200 G).

All material scheduled to be removed shall be deemed to be existing damaged materials in small or large sections. All such redundant material shall become the property of the Contractor and must be removed from site immediately.

All new material shall be deemed to be in patchwork and shall be of approved equal quality, colours, profiles, thickness, etc. and shall in all cases match the existing materials and shall be fixed (internally or externally) to existing material or surfaces.

All replacement, removal and repair work shall be done carefully as to not damage any adjacent or other material or work. Any damage to other or adjacent materials or areas caused by the negligence of the Contractor shall be repaired by him free of charge.

All work scheduled to be removed, hacked off or taken out shall be deemed to include the cleaning, removing of contact glue or bitumen and preparation of the remaining surfaces, areas where material were removed, or remaining work to receive new material or work specified.

Repair work shall also include all cutting, grinding, cutting into, welding, bending, strengthening, drilling, etc. to repair or to improve the items or areas as new and to match the existing.

Work scheduled to be realigned and re-fixed shall be deemed to include all necessary new additional materials, brackets, connector plates, bolts, pip rivets, nails, screws, spacer blocks, clamps, timber, and labour, etc. to leave the items as new and totally functional.

All floor surfaces scheduled to be cleaned and sealed shall include for stripping the floors from any fats, grime, dirt, oil and other deposits. Replacement of grout to ceramic and clay floor tiles shall also be included where necessary as per the tendered rate. Sealing of vinyl floor tiles shall be done in accordance with Technical Specification BE 03.01.10.

All new work are measured net and shall include all cutting, lapping, waste, bending, fixing, corners, mitres, fixing screws, pip rivets, nails, adhesive, grout, putty, etc, as well as cleaning and preparation of surfaces not already prepared as part of removed items, etc.

Tile work to floors shall include all cutting, spacers, waste, jointing, mitres, corners, epoxy grout and joint filler.

Ordering of certain specified materials i.e. industrial type extruded/split ceramic floor tiles needs special and urgent attendance and should be ordered timeously as to prevent any construction delays.

BE 06.02 SCHEDULED ITEMS

NEW WORK

BUILDING WORK

BE.01 Floor screeds:

(a) (Thickness indicated).....Unit: m^2

(b) Etc. for other thicknesses

The unit of measurement shall be the square metre of floor screed laid, as specified, on floors, steps or areas shown on the Drawings or as designated by the Engineer.

The tendered rates shall include full compensation for the construction of the floor screeds, including the supply of all materials, mixing, laying, finishing, the forming of nosings, readings, skirtings, etc.

BE.02 Joinery:

(a) Items measured by number:

(i) Doors (type and size indicated.....Unit: number

(ii) Etc. for other items measured by number

(b) Items measured by linear metre:

(i) Skirtings (size indicated) .....Unit: m

(ii) Etc. for other items measured by length

(c) Items measured by area:

(i) Eaves covering (type and thickness indicated).....Unit: m^2

(ii) Etc. for other items measured by area

The units of measurement shall be the number, metre or square metre of each type and/or size of joinery item specified.

The tendered rates shall include full compensation for the supply of all materials, manufacture, cutting, waste, fixing and installation of the joinery items.

BE.03 Floor tiling and finishes, etc:

(a) Measured by number:

(i) (Description of item).....Unit: number

(b) Measured by linear metre:

(i) (Description of item).....Unit: m

(c) Measured by area:

(i) (Description of item).....Unit: m^2

The unit of measurement shall be the number, metre or square metre as applicable to each item.

The tendered rates shall include full compensation for manufacturing, providing and installing each item complete as per specifications, drawings, descriptions as scheduled or as the existing and shall include for all labour, material, waste, plant, transport, delivery, access, scaffolding, fuel, etc. to the Engineer's approval.

ALTERATION WORK

BE.04 Alterations and repairs to existing structures:

(a) Indicate if repairs, alterations, removal, cleaning or sealing, etc:

(i) Description of individual items to be repaired, altered, removed, sealed, etc..... Unit: m^3, m^2, m, number

The unit of measurement for items repaired, altered, removed, sealed, etc. shall be cubic metre, square metre, metre or number as scheduled.

The tendered rates shall include full compensation for all costs to repair, refix, remove, clean and seal, cutting into, realign, taking off, temporary store, etc. as specified in the Standard and Technical Specifications and shall allow for all necessary labour, plant and new material needed to leave the scheduled items as new and to the approval of the Engineer. Refer also to the general inclusion of costs in BE 06.01.01.

TECHNICAL SPECIFICATION

BJ PAINTWORK

CONTENTS

BJ 01 SCOPE

This specification covers the painting/repainting and maintenance of new and existing building components and maintenance thereafter for various types of buildings and structures.

Paintwork shall mean the scope of work related to the preparation, painting and maintenance of new and existing building components. This specification does not include work related to galvanising of steelwork, which is specified elsewhere.

The complete scope of paintwork shall be as described in BJ 04: Detail of repair work.

BJ 02 STANDARD SPECIFICATIONS

BJ 02.01 GENERAL STANDARD SPECIFICATIONS

The latest edition, including all amendments up to date of tender of the following specifications, publications and codes of practice shall be read in conjunction with this specification and shall be deemed to form part thereof:

SANS 515 - Decorative paint with a non-aqueous solvent base for interior use
SANS 630 - Decorative high gloss enamel for interior and exterior
SANS 631 - Decorative oil gloss paint for interior and exterior use
SANS 633 - Emulsion paints for interior decorative purposes
SANS 634 - Emulsion paints for exterior use
SANS 678 - Primers for wood for interior and exterior use
SANS 681 - Undercoats for paints
SANS 683 - Roof paints (relevant sections)
SANS 723 - Wash primer (metal etch primer)
SANS 801 - Epoxy-tar paints
SANS 887 - Varnish for interior use
SANS 926 - Two-pack zinc-rich epoxy primer
SANS 1227 - Textured wall coatings, emulsion base, for interior and exterior use
SANS 1319 - Zinc phosphate primers for steel
SANS 10064 - Preparation of steel surfaces for coating

BJ 02.02 ADDITIONAL SPECIFICATIONS

Technical Specification BG: Metalwork
Paint manufacturers' specifications. These specifications shall take precedence over all others.

BJ 02.03 OCCUPATIONAL HEALTH AND SAFETY

The Contractor shall be required to comply with the Occupational Health and Safety Act 85 of 1993, Construction Regulations 2014 and related regulations. Non- compliance with these regulations, in any way whatsoever, will be adequate reason for suspending the Works.

BJ 03 VARIATIONS AND ADDITIONS TO STANDARD SPECIFICATIONS

BJ 03.01 ADDITIONAL REQUIREMENTS FOR PAINTWORK

BJ 03.01.01 General

a) Quality control

i) Application of all paints must be supported by the relevant paint manufacturer's technical quality control systems with regard to preparation, application, film thickness, colour/pigmentation, mixing, etc.
ii) The Contractor must submit his programme to the Engineer well in advance, particularly where high-risk surface applications (sheet metal roofs, etc) are concerned, in order to keep the manufacturer's technical personnel informed. Paint application may not commence until the manufacturer has inspected the surface preparation and given written approval thereof to the Engineer.

b) Paint systems

i) All paint shall be delivered to the site in the unopened containers on which the manufacturer's name and trademark appear.
ii) All materials for paintwork shall comply with the requirements for standards from the country from which it originated and shall be approved by the Engineer.
iii) The Contractor shall submit copies of the paint manufacturer's specifications, recommendations and datasheets to the Engineer for approval.
iv) The coating system shall be from one manufacturer unless otherwise specified. The paint manufacturer's instructions shall be strictly adhered to.
v) Paints, etc, shall be suitable for application on the surfaces on which they are to be applied and various coats must be compatible with each other. Those paints used externally shall be of exterior quality or suitable for exterior use.

c) Guarantee

i) The Contractor must give a 3 year written guarantee for the quality and workmanship of the paint work (fair wear and tear excepted). The Contractor shall be liable for any peeling or flaking paint applied by the Contractor and shall execute all such work of repair, rectification and making good of painted surfaces as may be ordered in writing by the Engineer. The manufacturer must carry out inspections at regular intervals during the construction period. The Manufacturer must issue a certificate of acceptance and compliance on completion to the client.

BJ 03.01.02 General preparation of new and existing work

All walls and ceilings, etc, shall be thoroughly cleaned prior to commencement of painting and the premises kept clean and free from dust during painting operations. Protect all surfaces not to be painted against spotting and spilling. Clean down and make good as necessary. Locks, door handles and similar fittings or fixtures shall be removed (or masked) and refitted on completion of painting.

(a) Plaster

(i) All surfaces, sills, ceilings, etc, shall be thoroughly dry before painting operations are started. Porous surfaces must be sealed with the appropriate sealer, thinned if necessary, before applying the paint system.
(ii) Exterior surfaces: Any cracks shall be scraped out and filled with an approved filler or patching plaster and rubbed down flush; the whole surface shall be well brushed down to remove all loose dust and powdery material before applying the first coat of the specified paint system.

(iii) Interior surfaces: All cracks, blow holes, etc, shall be filled with suitable stopping and rubbed down flush. The whole surface shall be smoothed to an even finish and dusted down. Any grease marks, crayon marks, etc, shall be cleaned off with sugar soap and thoroughly rinsed with clean water. The surface shall be thoroughly dry before painting operations are started.

(iv) Ceilings: Ceilings shall be brushed down and free of all dust and powdery materials. Cover strips and cornices shall be stopped where necessary and rubbed down smooth. All nail heads shall be primed, stopped and rubbed down flush. The surface shall then be wiped or brushed free of all loose or powdery materials before applying the recommended paint system.

(v) Fibre cement: Fibre cement surfaces shall be cleaned down and primed with an approved sealer and undercoat.

(b) Metalwork

(i) Iron and steel: New iron and steel metalwork shall be cleaned with an approved degreaser and the most effective method available (shot or sand blasting, mechanical wire brushing, hand wire brushing) used to remove all rust and millscale. Any salt deposits resulting from a marine or industrial environment shall be removed by washing with water prior to priming.

(ii) Galvanised surfaces: New galvanised surfaces shall be well cleaned to remove all traces of oil and dirt with galvanised iron cleaner and rinsed with clean water.

(c) Woodwork

New woodwork shall be brushed down and the surface prepared as follows: Knots shall be given a coat of an approved patented knotting. The surface shall be primed overall and all holes shall be filled. The surface shall then be rubbed down with glass paper until smooth and even. Woodwork that needs to be oiled, stained or varnished shall be free of all stains, pencil marks and other surface discolourations and blemishes and shall be stopped with tinted stopping and rubbed down.

(d) General

(i) Colours: All colours and tints are to be submitted to the Engineer for approval. Sample colours are to be prepared in all cases for the final coat and all work must be finished to colour approved by the Engineer. Where necessary, universal undercoat must be tinted to a shade lighter than the finishing coat.

(ii) Doors and windows: All doors and opening sections of windows must be left ajar after painting or varnishing until the paint is perfectly dry.

(iii) Protection and cleaning off: All necessary precautions are to be taken for the protection of all finished work and other trades during painting, and all ironmongery shall be removed where possible prior to the commencement of painting and re-fixed after completion. All paint spots, stains, etc, are to be cleaned off floors, walls, glass, etc, after completion.

BJ 03.01.03 Paint specifications for various components

(a) Fibre cement (ceilings)

(i) New work

(1) Interior

Ceilings to wet areas (ablutions, kitchens and laundries):

- Polyurethane alkyd enamel:

Prepare and apply one coat synthetic copolymer primer. Stop with interior crack filler, seal crack filler with above primer. Apply two coats of polyurethane alkyd enamel interior quality paint.

- Universal fungicidal additive:

To be added to above in proportions specified by the manufacturer. This additive will only be required in specific cases.

(2) Exterior

Preparation: Clean down to remove all dirt and grease, etc, fill nail- heads with exterior crack filler and sand down to a smooth and even surface.

Finishing coat (emulsion): Apply two coats of super acrylic copolymer PVA emulsion or polyurethane alkyd enamel.

(ii) Renovation (existing) work

(1) Interior

Ceilings previously painted, in good condition:

Preparation: Clean down to remove all dirt and grease, etc, fill nail- heads, cracks and defects with interior crack filler and sand down to a smooth and even surface.

Finishing coat (emulsion): Apply two coats of super acrylic copolymer PVA emulsion or polyurethane alkyd enamel.

Ceilings previously painted, in poor condition (to be finished in an emulsion system):

Preparation: Remove all loose and flaking paint, clean down to remove all dirt, grease, etc, prime nail-heads with zinc phosphate primer for steel. Apply one coat of primer to existing ceiling boards diluted with 20
% turpentine. Fill nail-heads, cracks and defects with interior crack filler and sand down to a smooth and even surface. Seal all repaired areas with above-mentioned primer.

Finishing coat: Apply two coats of super acrylic copolymer PVA. Ceilings to wet areas:

Preparation as above, but to be followed by one coat synthetic copolymer primer and two final coats polyurethane alkyd enamel interior quality paint (with fungicidal additive, only if specified).

In cases where fungicidal attack is prevalent the prepared surface must be washed down with antiseptic solution, followed by sodium hyperchlorite and allowed to react for 15 minutes before washing down with water. Once dry, primer and finishing coats may be applied.

(2) Exterior

Not applicable.

(b) Woodwork truss/rafters (overhangs)

(i) New work

(1) Interior

Not applicable.

(2) Exterior

- Egg-shell/High-gloss enamel:

Prepare and touch up knots with spirit soluble resin type knotting. Apply one coat of primer for wood. Stop with wood filler where necessary. Apply one coat of universal undercoat. Apply two coats of enamel.

- Creosote coating:

Prepare surface to be clean, dry and sound Apply on coat of creosote wood treatment coating.

(ii) Renovation (existing) work

(1) Interior

Not applicable.

(2) Exterior

Woodwork truss/rafters (overhangs) previously painted, in good condition (to be painted in egg-shell/high-gloss enamel):

Preparation: Clean down and sand to a smooth finish. Spot prime where necessary with primer for wood. Allow 24 hours drying. Stop with wood filler.

Undercoat: Apply one coat of universal undercoat. Allow 24 hours drying.

Finishing coat: Apply two coats of enamel paint.

Woodwork truss/rafters (overhangs) previously painted, in poor condition (to be finished in egg-shell/high-gloss enamel):

Preparation: Remove existing paint and sand down thoroughly. Touch up knots and resinous areas with knotting.

Primer: Apply one coat of universal undercoat. Allow 24 hours drying. Stop with wood filler and sand to a smooth finish.

Undercoat: Apply one coat of universal undercoat. Allow 24 hours drying.

Finishing coat: Apply two coats of enamel paint.

Creosote coating:

Preparation: Prepare surface. Apply two coats creosote wood treatment coating.

(c) Metalwork - steelwork and miscellaneous metal work (including general pipework)

(i) New work

(1) Interior

Unpainted:

Prepare and apply one coat zinc phosphate primer for steel. Apply one coat of universal undercoat. Apply two coats of high gloss enamel paint.

Shop-primed:

Touch up damaged primer with zinc phosphate primer for steel. Apply one coat of universal undercoat. Apply two coats of high-gloss enamel paint.

Cast-iron waste pipes:

Prepare and remove as much bitumen as possible. Apply one coat of aluminium paint. Apply one coat of universal undercoat. Apply two coats of high-gloss enamel paint.

(2) Exterior

Unpainted:

Prepare and apply one coat zinc phosphate primer for steel. Apply one coat of universal undercoat. Apply two coats of high-gloss enamel or oleoresinous aluminium paint (where applicable).

Shop-primed:

Touch up damaged primer with zinc phosphate primer for steel. Apply one coat of universal undercoat. Apply two coats of high-gloss enamel or oleoresinous aluminium paint (where applicable).

Cast-iron waste pipes:

Prepare and remove as much bitumen as possible. Apply one coat of universal undercoat. Apply two coats of high gloss enamel or oleoresinous aluminium paint (where applicable).

(ii) Renovation (existing) work

(1) Interior

Previously painted metalwork, in good condition (steel windows, door frames, miscellaneous steelwork, etc):

Preparation: Wash down with sugar soap and rise with clean water. Sand lightly and apply one coat universal undercoat.

Finishing: Apply two coats high-gloss enamel. Previously painted metalwork, in poor

condition:

Preparation: Remove all existing paint by means of scraping or wire brushing and sanding. Tightly adhering paint that cannot be removed may remain and be overcoated. Remove all signs of rust back to bright metal by sanding with emery cloth. Wash down with an approved degreaser, rinse with clean water to remove all traces thereof and allow to dry. Treat rusted areas with a water-based rust converter.

Primer: Apply one coat of zinc phosphate primer for steel. Allow overnight drying.

Undercoat: Apply one coat of universal undercoat. Allow overnight drying.

Finishing coat: Apply two coats high-gloss enamel. Allow overnight drying between coats.

Previously painted metalwork, to remove all previous paint to original surface:

Preparation: Remove all existing paint by means of scraping or wire Brushing, grinding and sanding Remove all signs of rust back to bright metal by sanding with emery cloth. Wash down with an approved degreaser, rinse with clean water to remove all traces thereof and allow to dry. Treat rusted areas with a water-based rust converter.

Primer: Apply one coat of zinc phosphate primer for steel. Allow overnight drying.

Undercoat: Apply one coat of universal undercoat. Allow overnight drying.

Finishing coat: Apply two coats high-gloss enamel. Allow overnight drying between coats.

(2) Exterior

Previously painted metalwork, in good condition:

Preparation: Wash down with sugar soap, followed by light sand-papering. Rinse with clean water.

Undercoat: Apply one coat of universal undercoat. Allow 24 hours for drying.

Finishing coat: Apply two coats of high-gloss enamel or oleoresinous aluminium paint (where applicable).

Previously painted metalwork, in poor condition:

Preparation: Remove all existing paint by means of scraping or wire brushing and sanding. Tightly adhering paint that cannot be removed may remain and be overcoated. Remove all signs of rust back to bright metal by sanding with emery cloth. Wash down with an approved degreaser, rinse with clean water to remove all traces thereof and allow to dry. Treat rusted areas with a water-based rust converter.

Primer: Apply one coat of zinc phosphate primer for steel. Allow for 24 hours drying.

Undercoat: Apply one coat of universal undercoat. Allow for 24 hours drying.

Finishing coat: Apply two coats of high-gloss enamel or oleoresinous aluminium paint (where applicable).

Previously painted metalwork, to remove all previous paint to original surface:

Preparation: Remove all existing paint by means of scraping or wire Brushing, grinding and sanding Remove all signs of rust back to bright metal by sanding with emery cloth. Wash down with an approved

degreaser, rinse with clean water to remove all traces thereof and allow to dry. Treat rusted areas with a water-based rust converter.

Primer: Apply one coat of zinc phosphate primer for steel. Allow overnight drying.

Undercoat: Apply one coat of universal undercoat. Allow overnight drying.

Finishing coat: Apply two coats high-gloss enamel. Allow overnight drying between coats.

(3) Aggressive environments

Not applicable.

(d) Gypsum board (ceilings, etc)

(i) New work

(1) Interior (dry areas)

- Super acrylic PVA:

Prepare and apply one coat synthetic copolymer primer for gypsum board diluted with 20 % turpentine. Stop with interior crack filler, seal crack filler with above-mentioned primer. Apply two coats of super acrylic copolymer PVA paint.

(2) Exterior (dry areas)

- Super acrylic PVA:

Prepare and supply one coat of synthetic copolymer primer for gypsum board diluted with 20 % turpentine. Stop with interior crack filler, seal crack filler with above-mentioned primer. Apply two coats of super acrylic copolymer PVA paint.

(ii) Renovation (existing) work

(1) Interior

Previously painted gypsum board with PVA in good condition:

Preparation: Wash down with sugar soap to remove all dirt, grease, etc, and rinse off with clean water. When dry, make good all cracks and defects with interior crack filler and sand to a smooth and even surface.

Finishing coat: Apply two coats super acrylic copolymer PVA. Previously painted gypsum board,

in poor condition:

Preparation: Clean down. Remove all paint by sanding and scraping.

Primer: Allow overnight drying. Make good cracks and holes with crack filler. Seal crack filler with above primer and allow to dry.

Finishing coat (emulsion): Apply two coats of super acrylic copolymer PVA.

(2) Exterior

Not applicable.

(e) Cement plaster (walls) and concrete surfaces

(i) New work

(1) Interior

- Polyurethane alkyd enamel (in wet areas, kitchens, etc):

Prepare and apply one coat bonding liquid, followed by one coat of synthetic copolymer primer for new plaster. Apply one coat of polyurethane alkyd enamel paint.

- Acrylic emulsion:

Same as above, but apply acrylic emulsion with smooth velvet sheen interior quality paint.

- Gloss enamel:

Same as for polyurethane alkyd enamel, but apply two coats high- gloss enamel.

- Super acrylic PVA:

Prepare and apply one coat of synthetic copolymer primer. Apply two coats of super acrylic copolymer PVA.

- Semi-gloss pure acrylic finish:

Prepare and apply one coat of synthetic copolymer primer. Apply one coat of pure acrylic paint.

(2) Exterior

- Pure acrylic:

Prepare and apply one coat of alkali resistant synthetic resins bonding liquid. Stop with exterior crack filler. Apply one coat of copolymer primer. Apply one final coat of pure acrylic paint.

- Pure acrylic with Teflon:

Preparation, priming and application as above.

- Super acrylic PVA:

Prepare and apply one coat of synthetic copolymer primer. Apply two coats of super acrylic copolymer PVA.

- Acrylic emulsion (external textured):

Preparation as above, followed by two coats textured exterior acrylic emulsion, allowing one hour drying time between coats.

(ii) Renovation (existing) work

(1) Interior

Previously distempered:

Preparation: Remove all distemper with a peeling agent. Rinse with clean water. Allow 48 hours to dry. Fill cracks and defects with interior crack filler. Sand down to a smooth and even surface.

Primer: Apply one coat of bonding liquid, allow a minimum of 24 hours and maximum of 72 hours for drying. Final primers as specified in BJ 03.01.03(e)(i).

Finishing coat: Apply similar paints to suit as specified in BJ 03.01.03(e)(i).

(2) Exterior

Previously painted cement plaster (walls) and surfaces, in good condition:

Preparation: Wash down thoroughly with sugar soap. Rinse with clean water. Fill with suitable exterior crack filler. Sand smooth.
Prime with one coat bonding liquid

Finishing coat: Apply similar paints to suit as specified in BJ 03.01.03(e)(i).

Previously painted cement plaster (walls) and surfaces, in poor condition (ie peeling, crazing, etc, not previously limewashed):

Preparation: Remove all paint and fill with suitable exterior crack filler.

Priming coat: Prime with one coat bonding liquid, allow to dry for a minimum of 24 hours and a maximum of 72 hours.

Finishing coat: Apply similar paints to suit as specified in BJ 03.01.03(e)(i).

(f) Fibre cement board (fascias and ceilings)

(i) New work

(1) Interior

New and wet asbestos sheets shall be allowed to dry out before painting is commenced.

Ceiling boards must be well primed on both sides with an approved sealer/undercoat before fixing.

- Super acrylic PVA:

Prepare and apply one coat of sealer/undercoat. Prime nail heads with metal primer. Stop with filler. Apply two coats of super acrylic copolymer PVA.

(2) Exterior

New and wet asbestos sheets shall be allowed to dry out before painting is commenced.

Fascia boards and barge boards shall be well primed on both sides and edges painted with sealer/undercoat before fixing.

All sides of fascia boards must receive final coatings.

- Super acrylic PVA:

Prepare and apply one coat sealer/undercoat. Prime nail heads with zinc phosphate metal primer. Stop with filler. Apply two coats of super acrylic copolymer PVA.

(ii) Renovation (existing) work

(1) Interior

Previously painted fibre cement board with emulsion paint, in good condition:

Preparation: Clean down thoroughly to remove any signs of dirt or grease. Fill all screw heads with a flexible resistant filler after screw heads have been primed.

Finishing: Apply two coats of super acrylic copolymer PVA paint. Previously painted fibre cement

board in poor condition:

Preparation: Remove previous paint coatings with super paint stripper. Thoroughly wash down with sugar soap and rinse with clean water. Prime nail and screw heads with zinc phosphate metal primer. Allow to dry.

Primer: Apply one coat of synthetic copolymer primer to all surfaces including back and edges, allow to dry. Fill all screw heads with weather resistant filler, allow to dry, sandpaper smooth and touch up with primer.

Finishing: Apply two coats of super acrylic copolymer PVA paint.

(2) Exterior

Previously painted fibre cement board with emulsion paint in good condition:

Preparation: Clean down thoroughly to remove any signs of dirt or grease. Fill all screw heads with a flexible weather resistant filler after screw heads have been primed.

Finishing: Apply two coats of super acrylic copolymer PVA paint. Previously painted fibre cement

board, in poor condition:

Preparation: Remove previous paint coatings with super paint stripper. Thoroughly wash down with sugar soap and rinse with clean water. Prime nail and screw heads with zinc phosphate metal primer. Allow to dry.

Primer: Apply one coat of sealer/undercoat to all surfaces including back and edges, allow to dry. Fill all screw heads with weather resistant filler. Allow to dry and sandpaper smooth. Touch up with primer.

Finishing: Apply two coats of super acrylic copolymer PVA paint.

(g) Galvanised iron roof (also gutters and rainwater pipes)

(i) New work

(1) Interior

Not applicable.

(2) Exterior

Galvanised iron - roofs: Water-based pure acrylic emulsion paint:

Scrub down thoroughly with degreaser, followed by a cleaner for galvanised iron. Rinse off thoroughly and ensure that all traces of cleaner have been removed and that the surfaces are free of any grease and oil. Apply one coat of galvanised metal primer. Allow to dry for 5 hours. (Must be overcoated within 24 hours maximum.) Apply

one coat of water-based pure acrylic emulsion paint with non-fading pigment.

Galvanised iron - roofs: Mat acrylic roof paint:

Scrub down thoroughly with degreaser, followed by a cleaner for galvanised iron. Rinse off thoroughly and ensure that all traces of cleaner have been removed and that the surface is free of any grease and oil. Apply two coats of mat acrylic roof paint.

Galvanised iron - gutters and rainwater pipes: Gloss enamel:

Scrub down thoroughly with degreaser, followed by a cleaner for galvanised iron. Rinse off thoroughly and ensure that all traces of cleaner have been removed and that the surface is free of any grease and oil. Apply one coat of primer for galvanised iron. Allow to dry for 5 hours. (Must be overcoated within 24 hours maximum.) Apply two coats of gloss enamel paint with non-fading pigment.

(ii) Renovation (existing) work

(1) Interior

Not applicable.

(2) Exterior

Previously painted galvanised iron, in good condition:

Preparation: Thoroughly scrub down with fibre scrubbing brushes and sugar soap and rinse with clean water.

Finishing coat: Apply one coat water-based pure acrylic emulsion paint with non-fading pigment.

Unpainted or previously painted galvanised iron, in poor condition (ie flaking, peeling and rusting):

Preparation: Remove all previous paint coatings with steel wire brushes, plumber's egg-shaped lead scrapers, and coarse floor sandpaper. Remove all traces of rust with emery cloth back to bright metal and apply approved rust converter. Thoroughly scrub down using galvanised iron cleaner and rinse with clean water.

Primer: Apply one coat of galvanised metal primer. Allow a minimum of 5 hours and a maximum of 72 hours for drying.

Finishing coat: Apply one coat of water-based pure acrylic emulsion paint with non-fading pigment.

(h) Timber (doors, cornices, window frames, counters, skirtings, etc)

(i) New work

(1) Interior

- Polyurethane alkyd enamel (wet areas, kitchens, etc):

Prepare knots with spirit soluble resin type knotting. Prime with primer (sanding sealer) for wood. Fill imperfections where necessary with wood filler. Apply one coat of universal undercoat. Apply two coats of polyurethane alkyd enamel.

- High-gloss/egg-shell enamel:

Prepare knots with spirit soluble resin type knotting. Prime with primer (sanding sealer) for wood. Fill imperfections where necessary with wood filler. Apply one coat of universal undercoat. Apply two coats of enamel.

- Gloss/suede varnish (interior quality solvent based):

Prepare knots with spirit soluble resin type knotting. Fill imperfections with wood filler. Sand surfaces to a smooth finish in grain direction and dust off.
Thin first coat down in a ratio of 3 parts varnish to 1 part mineral turpentine and apply. Allow to dry for 24 hours. Apply two full- strength final coats with 24 hours drying time between applications.

(2) Exterior

- High-gloss/egg-shell enamel:

Prepare with spirit soluble resin type knotting. Apply one coat of primer for wood. Fill where necessary with wood filler. Apply one coat of universal undercoat. Apply two coats of high gloss enamel.

- Gloss/suede varnish (exterior quality ultraviolet resistant solvent based):

Prepare knots with spirit soluble resin type knotting. Fill imperfections with wood filler. Sand surfaces to a smooth finish in grain direction and dust off.
Thin first coat down in a ratio of 3 parts varnish to 1 part mineral turpentine and apply. Allow to dry for 24 hours. Apply two full- strength final coats with 24 hours drying time between applications.

(ii) Renovation (existing) work

(1) Interior

Previously painted woodwork, in good condition (to be finished in polyurethane alkyd enamel):

Preparation: Wash sown with sugar soap to remove all dirt, grease, etc, then rinse off with clean water. Sand down to a smooth and mat surface. Make good cracks and defects with wood filler and after 24 hours drying, sand down again.

Finishing coat: Apply two coats of polyurethane alkyd enamel. Allow 24 hours for drying between coats.

Previously varnished woodwork in good condition (to be finished with interior quality varnish):

Repair defects with wood filler. Sand surfaces to a mat finish and apply two final coats varnish with 24 hours drying time between applications.

Previously painted woodwork in poor condition (to be finished with high- gloss/egg-shell enamel):

Preparation: Remove all paint, varnish and stain with super paint stripper. Wash down thoroughly with sugar soap and rinse with clean water. When surface is completely dry, sand down and apply one coat of spirit soluble resin type knotting to all knots. Fill all cracks and defects with wood filler and after 24 hours of drying, sand down to a smooth and even surface. Apply one coat oleoresinous wood primer. Apply one coat universal undercoat.

Finishing coat: Apply two final coats enamel.

Previously stained and varnished or painted woodwork in poor condition (to be finished in polyurethane alkyd enamel):

Preparation: Remove all paint, varnish and stain with super paint stripper. Wash down thoroughly with sugar soap and rinse with clean water. When surface is completely dry, sand down and apply one coat of spirit soluble resin type knotting to all knots. Fill all cracks and defects with wood filler and after 24 hours of drying, sand down to a smooth and even surface. Apply one coat oleoresinous wood primer.

Finishing coat: Apply one coat polyurethane alkyd enamel.
Previously varnished woodwork in poor condition (to be finished with interior quality varnish):

Remove all varnish with paint stripper. Wash down to dry completely. Further preparation and applications as for BJ 03.01.03(h)(i): New work
- interior.

(2) Exterior

Previously painted woodwork, in good condition (to be repainted with high-gloss/egg-shell enamel):

Preparation: Clean down and sand to a smooth finish. Spot prime where necessary with oleoresinous wood primer. Allow 24 hours for drying. Stop defects with a flexible weather resistant wood filler.

Undercoat: Apply one coat of universal undercoat. Allow 24 hours drying.

Finishing coat: Apply two coats of enamel.

Previously varnished woodwork in good condition (to be finished with exterior quality ultraviolet resistant solvent based varnish):

Preparation and application as for similar interior item above.

Previously stained and varnished or painted woodwork, in poor condition (to be finished in high-gloss/egg-shell enamel):

Preparation: Remove all paint, varnish and stain with super paint stripper. Wash down thoroughly with sugar soap and rinse with clean water. When surface is completely dry, sand down and apply one coat of spirit soluble resin type knotting to all knots. Fill all cracks and defects with wood filler and after 24 hours drying, sand down to a smooth and even surface. Apply one coat oleoresinous wood primer. Apply one coat universal undercoat.

Finishing coat: Apply two final coats of enamel.

Previously stained and varnished or painted woodwork, in poor condition (to be finished in polyurethane alkyd enamel):

As for similar interior item above.

Previously varnished woodwork in poor condition (to be finished with exterior quality ultraviolet resistant solvent based varnish):

Preparation and application as for similar interior item above.

(i) Concrete and cement surfaces - floor paint

(i) New work

Exterior and interior

Preparation: Remove laitance, residual cement spillage, etc, by means of carborundum grinding and vacuum clean to remove all dust. Remove oil, grease or any other surface contaminants with degreaser and wash off with clean water. Allow to dry. The floor must have less than 5 % moisture content before painting may be done.

Finishing coats: Apply two coats of an alkali resistant solvent based stoep (modified alkyd) paint. The first coat may be thinned with 25 % mineral turpentine. Sixteen hours drying time must be allowed between coats.

(ii) Renovation (existing) work

Exterior and interior

Previously painted concrete and cement surfaces, in good condition:

Preparation: Remove any loose and flaking paint by means of carborundum grinding, back to firm feathered edges. Remove any polish, grease, oil and other contaminants with degreaser, wash clean and allow to dry. Sand old paint to a mat finish and vacuum clean to remove all dust.

Finishing coats: Apply two coats as for new work above.

Previously painted concrete and cement surfaces, in poor condition:

Strip completely by suitable means and treat as for new work above.

(j) Cement plaster or facebrick walls and concrete surfaces where damp penetration is evident

(i) Renovation

Exterior and interior

Preparation: Remove all damaged paintwork, efflorescence, loose friable material, etc, back to bare and sound substrate. Repair all damaged surfaces with suitable approved materials to match original surface.

Surfaces may remain damp and in some cases will require additional wetting, depending on the particular coating used.

Damp sealing coats: Apply two coats approved synthetic polymer modified water barrier coating in strict accordance with the particular product manufacturer's specifications. Allow 24 hours between coats unless otherwise specified.

Finishing coats: Apply decorative finishing coats to suit, as in BJ 03.01.03(e).

BJ 04 DETAIL OF REPAIR WORK

The detail of the scope of work is described in the Schedule of Quantities.

BJ 05 MAINTENANCE

No maintenance will be required for paintwork under this contract.

BJ 06 MEASUREMENT AND PAYMENT

BJ 06.01 MEASUREMENT AND RATES

BJ 06.01.01 General inclusion of costs and specifications

Notes:

All material scheduled to be removed shall be deemed to be existing damaged material. All such redundant material shall become the property of the Contractor and must be removed from site immediately.

All new material shall be deemed to be in patchwork and shall be of approved equal quality, colours, profiles, thickness, etc and shall in all cases match the existing materials and shall be applied (internally or externally) to existing material or surfaces.

All removal and repair work shall be done carefully as to not damage any adjacent or other material or work. Any damage to other or adjacent materials or areas caused by the negligence of the Contractor shall be repaired by him free of charge.

All work scheduled to be removed or taken out shall be deemed to include the cleaning and preparation of the remaining sections, areas, or work to receive the new material or work specified.

Repair work shall also include all cutting, grinding, cutting into, welding, bending, strengthening, drilling, etc to repair or to improve the items or areas as new and to match the existing.

Work scheduled to be realigned and refixed shall be deemed to include all necessary new additional materials, brackets, connector plates, bolts, pip rivets, nails, screws, spacer blocks, clamps, timber, and labour, etc to leave the items as new and totally functional.

All new work are measured net and shall include all cutting, lapping, waste, bending, fixing, corners, mitres, fixing screws, pip rivets, nails, adhesive, grout, putty, etc, as well as cleaning and preparation of surfaces not already prepared as part of removed items, etc.

All paintwork shall include for surface preparation, cleaning, primer(s), undercoat(s) and final coat(s) as specified by the manufacturers and in the Technical Specifications. Scheduled items in the Schedule of Quantities are mainly brief descriptions of the final coat(s) to identify the paint system as specified in the Specifications.

Most steel surfaces such as gratings, screens, gates, doors, mesh, louvres, burglar proofing, windows, etc are measured both sides on the net flat overall area of the item. Paint to roof covering and side cladding, etc are measured wet on the flat overall area of the items and not along the girth of the sheeting. All final re- measurements for payment purposes will be done on the same principles.

Rates tendered for paintwork shall be deemed to include for all "line cutting" between different colours of paint specified by the Engineer in dados, skirtings, etc.

Rates tendered for paintwork on ceilings and cornices shall be deemed to include for paint on cover and jointing strips.

Rates tendered for paintwork on ceilings, wall panelling, divisions, etc shall be deemed to include for timber door frames, jointing and cover strips, skirtings, cornices, quadrant beads, etc if painted with the same specified paint material and in the same colour schemes.

Where specified to be painted in contrasting colours, varnished or with a different paint material the paintwork on the door frames, skirtings, cornices, beads, cover strips, etc will be measured and paid for separately per linear metre.

Specification for floor paint

Preparation:

The concrete floor must have less than 3% moisture before painting is attempted. Remove laitance, residual cement spillage, etc by Carborandum grinding. Vacuum clean to remove all dust. Remove oil, grease, or any other surface contaminants with degreaser. Allow to dry thoroughly before painting.

Paint system:

Apply one coat of an alkali resistant solvent based stoep (modified alkyd) paint. The first coat may be thinned with approximately 25% mineral turpentine to aid penetration.

Apply one finishing coat of an alkali resistant solvent based stoep (modified alkyd) paint.

Protection of existing furniture, carpets, finishings, cupboards, etc during paint procedures

Protection, sheets and screens:

All existing finishings, carpets, floors, furniture, etc shall be carefully handled, moved when instructed within the specific room, building or area to be painted, covered with sheets, screens or other approved methods to protect the items or finishings against damage or spilled paint spots or stains. Any damage caused to the mentioned existing items shall be rectified or replaced by the Contractor without additional payment.

The costs of sheets, covers, screens and all labour to address the above shall be deemed to be included in the tendered rates for the individual payment items or in the general preliminary cost items. No claims by the Contractor in this regard will be entertained.

BJ 06.02 SCHEDULED ITEMS

NEW UNPAINTED SURFACES:

BJ.01 Paint to new unpainted surfaces:

(a) Description of surface:

(i) Brief description of final paint type:

(a) Description of application area or item to be painted..... Unit: m^2, m, number

(b) Etc, for other areas or items

The unit of measurement shall be the number, metre or square metre as applicable to each item.

The tendered rates shall include full compensation for manufacturing, providing and applying each item complete as per specifications, drawings, descriptions as scheduled or as the existing and shall include for all labour, material, preparation work, waste, plant, transport, delivery, access, scaffolding, fuel, miscellaneous items and material, etc to the Engineer's approval.

PREVIOUSLY PAINTED SURFACES:

BJ.02 Paint to previously painted surfaces:

(a) Description of surface:

(i) Brief description of final paint type:

(a) Description of application area or item to be painted..... Unit: m^2, m, number

(b) Etc, for other areas or items

The unit of measurement shall be the number, metre or square metre as applicable to each item.

The tendered rates shall include full compensation for manufacturing, providing and applying each item complete as per specifications, drawings, descriptions as scheduled or as the existing and shall include for all labour, material, preparation work, waste, plant, transport, delivery, access, scaffolding, fuel, miscellaneous items and material, etc to the Engineer's approval.

PREVIOUSLY PAINTED SURFACES IN POOR CONDITION:

BJ.03 Paint to previously painted surfaces in poor condition:

(a) Description of surface:

(i) Brief description of final paint type:

(a) Description of application area or item to be painted..... Unit: m^2, m, number

(b) Etc, for other areas or items

The unit of measurement shall be the number, metre or square metre as applicable to each item.

The tendered rates shall include full compensation for manufacturing, providing and applying each item complete as per specifications, drawings, descriptions as scheduled or as the existing and shall include for all labour, material, preparation work, waste, plant, transport, delivery, access, scaffolding, fuel, miscellaneous items and material, etc to the Engineer's approval.

PREVIOUSLY PAINTED SURFACES TO REMOVE ALL PREVIOUS PAINT TO ORIGINAL SURFACE:

BJ.04 Paint to previously painted surfaces to remove all previous paint to original surface

(a) Description of surface:

(i) Brief description of final paint type:

(a) Description of application area or item to be painted..... Unit: m^2, m, number

(c) Etc, for other areas or items

The unit of measurement shall be the number, metre or square metre as applicable to each item.

The tendered rates shall include full compensation for manufacturing, providing and applying each item complete as per specifications, drawings, descriptions as scheduled or as the existing and shall include for all labour, material, preparation work, waste, plant, transport, delivery, access, scaffolding, fuel, miscellaneous items and material, etc to the Engineer's approval.

TECHNICAL SPECIFICATION FOR CONCRETE CONSTRUCTION

BK STRUCTURAL CONCRETE

BK 01 SCOPE

This specification covers the repair of existing structural concrete elements and the supply, delivery and implementation of the repair procedures for the various types of structures.

Structural concrete shall mean the scope of work to repair all structural concrete components such as walls, columns, stairs and suspended slabs and floors. Joint repairs also form part of this specification. This specification does not include work related to metalwork and paintwork that are specified elsewhere.

BK 02 GENERAL STANDARD SPECIFICATIONS

The latest edition, including all amendments up to date of tender of the following specifications, publications and codes of practice shall be read in conjunction with this specification and shall be deemed to form part thereof:

SANS 1200 G - Concrete (structural)
SANS 1200 GA - Concrete (small works)
SANS 1200 GB - Concrete (ordinary buildings)
SANS 1200 GE - Precast concrete (structural)
SANS 1200 GF - Prestressed concrete
SANS 0100 - Structural use of concrete
SANS 110 - Sealing compounds for the building industry, two-component, polysulphide base
SANS 1077 - Sealing compound for the building and construction industry, two-component, polyurethane-base SANS 1254- Sealing compounds for the building industry, oleo-resinous base, for interior and exterior use
SANS 1305 - Sealing compounds for the building industry, one-component, siliconed-rubber-base

BK 02.01 OCCUPATIONAL HEALTH AND SAFETY

The Contractor shall be required to comply with the Occupational Health and Safety Act 85 of 1993, Construction Regulations 2014 and related regulations. Non-compliance with these regulations, in any way whatsoever, will be adequate reason for suspending the Works.

BK 03 PROJECT SPECIFICATION

This Project Specification takes precedence over the Standard Specification, except in the case where an aspect is not covered by the Project Specification, in which case the Standard Specification will apply.

BK 03.01 CONCRETE MATERIALS

SANS standards: All concrete materials shall comply with the relevant SANS standards.

BK 03.01.01 Concrete mix designs

All mix designs for 20MPa and higher grades of concrete shall be tabled and approved by the Engineer in writing, before these mix designs may be used. Each mix design shall clearly state the type, origin and quantity per cubic metre of concrete for each constituent material. The mix

design and constituent materials shall be such so as to produce **low shrinkage, crack-free concrete**.

BK 03.01.02 Cement types

Only cements of type CEM I and CEM IIA as per SANS 50197-1 may be used. In addition, only cements of strength class 42,5MPa and higher may be used. Cement shall not be stored for more than 4 weeks before it is used.

BK 03.01.03 Cement extenders

Cement extenders such as fly-ash and slag may not be used in conjunction with CEM IIA. Should the Contractor wish to use cement extenders with CEM I, then he shall obtain the Engineer's prior approval.

BK 03.01.04 Minimum cement content

The minimum cement content of CEM I or CEM IIA cements are: 280 kg/m^3 for 25MPa, 300 kg/m^3 for exposed 25MPa, 310 kg/m^3 for 30MPa and 330 kg/m^3 for 35MPa concrete.

BK 03.01.05 Water

The maximum water / cement ratio is as follows: 0,67 for 25MPa, 0,60 for 30MPa and 0,53 for 35MPa concrete. Admixtures such as water-reducing agents or plasticizers may be used, but then only strictly according to the manufacturer's instructions.

BK 03.01.06 Aggregates

The coarse aggregate (stone) shall be 19mm natural stone unless otherwise specified. The total mass of coarse aggregate (stone) shall exceed the total mass of fine aggregate (sand) per cubic metre of concrete. Aggregates used in concrete for sewage treatment works, channels and tunnels shall be dolomitic aggregate. A non-dolomitic filler sand may be used.

BK 03.02 REINFORCING STEEL MATERIALS

SANS standards: All reinforcing steel shall comply with the relevant SANS standards.

BK 03.02.01 Steel types

Mild steel (R-steel) shall not be replaced by high tensile steel (Y-steel).

BK 03.02.02 Steel bar dimensions

Steel bars shall be cut and bent strictly to the dimensions and radii stipulated on the project's bending schedules.

BK 03.03 FORMWORK CONSTRUCTION

BK 03.03.01 Formwork design

a) All formwork shall be designed by a competent person or a competent company, and the requirements for continuous propping and / or multi-level propping shall be calculated to a theoretical model acceptable to the Engineer. Design loads will be supplied by the Engineer on request. The Contractor shall make provision for the continued support of slabs and beams while the formwork pans / panels are being removed. No back-propping is allowed.

b) Wall formwork ferrules: The lay-out and positioning of ferrules shall be approved by the Architect / Engineer. In the case of water-retaining structures ferrules shall be of a type which does not leave holes through the walls.

c) Formwork quality: All formwork shall be sturdy, leak-proof and lightly oiled.

d) Formwork finish: All formwork finishes shall be at least of class SMOOTH to Degree of Accuracy II, or class SPECIAL to Degree of Accuracy I when so specified on the concrete drawings. Top surfaces of wood- and steel-trowelled concrete floors are to be class SPECIAL.

e) Upward cambers: All beams, bands and slabs shall have the following upward cambers, unless otherwise indicated on the concrete drawings: Cantilever spans: span ÷ 200 and other spans: span ÷ 500.

f) Construction joints: Positions of construction joints in beams and slabs shall be discussed with, and approved by the Engineer, and shall be formed using planks or well-supported chicken wire.

g) Cast-in items: The Contractor shall ensure that all cast-in items, eg conduits, sleeves, pockets, etc, of all the various building disciplines are accurately placed and secured before concrete is cast.

BK 03.03.02 Removal of formwork

Formwork and props may only be removed after "n" 24h days:

Walls and columns:	2 (hot / normal)	3 (cold)
Slabs with props left underneath:	4	7
Beams with props left underneath:	7	12
Slab props:	10	17
Beam props:	14	21

BK 03.04 REINFORCING STEEL FIXING

a) Steel shall be fixed using the specific project's fixing plans and bending schedules.

b) Steel must be inspected and approved in writing by the Engineer before concrete may be cast. The Contractor shall give the Engineer at least 2 day's notice of inspections.

c) Steel must be properly fixed in position, and purpose-made plastic or concrete spacer blocks must be in position before inspections.

d) The concrete cover to reinforcing bars shall be as specified on the plans and schedules, but under no circumstances shall the cover be less than: 20mm for plastered and internal slabs and beams; 30mm for exposed concrete surfaces and concrete columns; 40mm in the case of water-retaining structures; 75mm for concrete cast against soil.

e) No welding of reinforcing steel bars is allowed.

BK 03.04 CONCRETE CONSTRUCTION

a) Concrete shall be discharged in the position needed and not moved sideways with vibrators.

b) Concrete shall be properly vibrated using an adequate number of mechanical vibrators.

c) Concrete may only be cast when the ambient temperature is between 5ºC and above 32ºC. No concrete may be cast during rain and hail, or shortly before a rain storm.

d) All concrete elements shall be cured with either, tight wrapping with plastic, a 50mm layer of wet sand or covered with wet underfelt and polythene sheeting, whichever appropriate, for the following durations: 5 days when hot / normal and 7 days when cold.

e) Other curing methods must be approved, subject to approval by the Engineer.

BK 03.05 CONSTRUCTION TOLERANCES

a) All concrete shall at least be constructed to Degree of Accuracy II (SMOOTH finish), and Degree of Accuracy I (SPECIAL finish) when so specified on the concrete drawings, as well as in the case of precast concrete elements.

b) Each permissible deviation is binding in itself, no cumulative effect will be allowed.

c) Permissible deviation (PD) of dimensions. Some selected values are:

PD:	DoA II:	DoA I:
Cross-section dimensions	-5 / +15 mm	-5 / +5 mm
Flatness of a plane surface	5 mm	3 mm
Abrupt change in continuous surface	5 mm	2 mm
Linear dimension (not cross-sections)	-20 / +20 mm	-10 / +10 mm
Verticality (per metre height)	5 mm	2 mm
Wood- / steel-trowelled top surfaces	-3 / + 3 mm	-3 / +3 mm

BK 03.06 CONCRETE TESTING

a) A set of concrete test cubes shall be made for every 50m^3 of concrete produced, and at least one set of each day's concrete produced. Cubes shall be made strictly according to the SABS prescribed method, and shall be cured and tested by an independent laboratory.

b) A set of test cubes comprises 6 cubes, 3 to be tested on 7 days, and 3 on 28 days.

c) When ready-mixed concrete is used, the Contractor must still make cubes on site. Process cube results from a ready-mix plant are not acceptable.

d) A set of 3 cubes tested at 28 days passes when the average strength is at least 2MPa higher than the specified strength, and when no single cube tests lower than 3MPa below the specified strength.

BK 03.07 CONCRETE SCREEDS

(a) General

Concrete screeds shall have a minimum thickness of at least 50 mm. The Engineer shall determine the areas of which the concrete screeds need to be replaced.
Only cements of type CEM I and CEM IIA as per SANS 50197-1 may be used. In addition, only cements of strength class 42,5MPa and higher may be used. Cement shall not be stored for more than 4 weeks before it is used.
Coarse aggregate maximum size: 10 mm
28-day cube strength: 30 MPa OR 35 MPa. (as specified)

The use of an approved plasticizer is recommended to reduce the water content of the mix to the absolute workable minimum.

The mix design must be submitted to the Engineer in advance for approval. Refer to BK 02.06 for

the testing requirements of concrete.

(b) Preparation

All laitance on the surface of the slabs must be removed, using mechanical equipment such as scabblers, so as to expose the coarse aggregate of the concrete.

Before commencement of the screed, remove all loose material and dust, and keep the slabs thoroughly wet for eight hours, before placement of the screed.

(c) Placement of the screed

Remove all surface water from the slab. Apply a grout to the slab surface, which consists of a 1:1 mix of cement and clean fine sand, with just enough water to provide the consistency of a slurry. Vigorously brush the grout into the scabbled surface of the slabs using brooms. Strike off all surplus grout, leaving a thin layer of grout.

Place the screed concrete in one layer, in a checker board pattern, while the grout layer is still visibly wet. Compact the concrete very well using small mechanical vibrators.

(d) Finishing

The surface finish shall be SPECIAL as per SABS 1200G attained by steel trowelling.

Power floating should not commence until such time as the concrete surface, has lost its sheen and barely shows footprints.

All laitance on the surface of the fresh concrete screed resulting from the compaction of concrete, must be struck off prior to mechanical trowelling. Over-trowelling, causing excessive cement-water paste to come to the surface, must be strictly avoided.

(e) Joints

The screed shall have construction joints and expansion joints, in all the exact same positions as the underlying concrete slab.

In addition the screed shall be divided into panels of no larger than 3 x 3m. The length to width ratio of these panels shall not exceed 1.5.

All joints shall be formed with side formwork. An expansion joint former specifically developed for the intended applications must be used as specified by the Engineer.

Joints must be sealed with an approved 1-part polyurethane joint sealer for the intended purpose according to the Engineer's specification.

(f) Curing

Curing of the screed concrete shall commence directly after the finishing operation stops, and shall continue for 7 days. The method of curing shall be by means of well held down plastic sheeting and with the daily adding of water.

BK 03.08 MOVEMENT JOINTS

BK 03.08.01 Joint Former

Ensure all concrete surfaces are free from base grit and dust. Apply glue in vertical strips ± 100 mm wide and 25 mm from the top to avoid the tear-off strip from sticking to the concrete face.

Allow the glue to dry (according to manufacturer's instructions) and then stick the joint former onto the glued concrete face.

Cast the next section of concrete as required. Take care not to let the wet concrete get behind joint former as this will result in a wavy joint.

When the joint sealant is about to be applied, simply peel the tear-off strip out of the formed joint, leaving an even groove of uniform depth for filling with sealant.

BK 03.08.02 Joint Sealant

Joints < 10 mm are normally designed for crack control and therefore they are not movement / expansion joints. The joint width to depth ratio is important at the time of the application of the sealant (guide value of +10°C).

BK 03.08.03 Application Method /Tools

After suitable joint and substrate preparation, insert Backing Rod to required depth and apply primer if necessary. Insert cartridge into sealant gun and firmly extrude joint sealant into joint, making sure that it is full contact with the side of the joint. Fill the joint, avoiding air entrapment. The joint sealant must be tooled firmly against joint sides to ensure good adhesion.

Masking tape must be used where sharp exact joint lines or exceptionally neat lines
are required. Remove the tape whilst the sealant is still soft. Sleek joint with smoothing liquid for a perfect sealant surface.

BK 03.09 REQUIREMENTS FOR REPAIR OF STRUCTURAL CONCRETE

BK 03.09.01 Concrete repair

All existing structural concrete to be inspected to determine the extent of damage and repair work required. All remedial concrete work to be classified into the following categories by the Engineer's representative:

- Surface concrete repair

Cosmetic repair of concrete surfaces where no reinforcing is exposed, where cover to reinforcement is not a problem (non-aggressive environment) and for non-structural repairs.

- Mild to moderate concrete repair

When the reinforcing is exposed and the extent thereof is small compared to the size of the element under consideration.

- Severe concrete repair

Where the front of the reinforcing is exposed in large areas or reinforcing is exposed totally. Generally when the defective areas have adverse structural implications.

The above categories do not apply to off-shutter concrete, which will be treated on merit.

Any structural concrete elements that are damaged to such an extent that they cannot be classified under severe concrete repair, will be treated on merit. Detailed instructions will be issued during repair for the rehabilitation of such structural concrete elements.

BK 03.09.02 Surface concrete repair procedure

The following procedure, or similar approved by the Engineer's representative to be used:

- Remove all loose and defective material and clean around affected area to expose aggregate.
- Saw-cut 10 mm vertically around edges of repair area and break out concrete within to avoid tapered feathering.
- Wet area well, approximately 30 minutes before commencement of repair.
- Apply an approved shrinkage compensated pre-mixed ready to use single-component polymer modified, cementitious repair mortar in strict accordance with the manufacturer's specifications.
- The repaired surface to be cured by covering with plastic sheeting and keeping wet for 48 hours or as otherwise specified.

BK 03.09.03 Mild to moderate concrete repair procedure

The following procedure, or similar approved by the Engineer/Department's representative to be used:

- Remove all loose and defective material and break out to a minimum depth of 10 mm.
- Saw-cut 10 mm vertically around edges of repair area and break out concrete within, to avoid tapered feathering.
- Ensure that concrete is free from laitance, oil, grease, etc, and is sound, firm and clean.
- Exposed reinforcing to be wire brushed clean and free of all rust and then coated with an approved single component epoxy zinc primer.

- The concrete to be thoroughly wetted and kept wet for a minimum of 12 hours before applying remedial product, loose standing water to be removed prior to application of repair mortar.

- Apply an approved shrinkage compensated pre-mixed ready to use single-component polymer modified, cementitious repair mortar in strict accordance with the manufacturer's specifications.

- The repaired surface to be cured by covering with plastic sheeting and keeping wet for 48 hours or as otherwise specified.

BK 03.09.04 Severe concrete repair procedure

The following procedure or similar approved by the Engineer's representative to be used:

- Propping of structure may be necessary during repair period.

- Chop around defective area removing all loose and suspect material taking care not to damage the existing reinforcing.

- Exposed reinforcing to be wire brushed clean and free of all rust and then coated with an approved single component epoxy zinc primer.

- The damaged area to be chopped rectangular in shape to expose the sound aggregate, and feathered edges to be saw-cut vertically and broken out to a minimum depth of 10 mm.

- Ensure that the cavity is clean, dry and free of any debris.

- Apply an approved epoxy resin repair compound strictly in accordance with the manufacturer's specifications.

- Apply an approved shrinkage compensated pre-mixed ready to use single-component polymer modified, cementitious repair mortar in strict accordance with the manufacturer's specifications.

BK 03.10. EXPANSION JOINT REMEDIAL PROCEDURE

The following procedure to be used for remedial work to expansion joints.

- Remove all damaged sealant from expansion joint.

- Joint former/filler must be removed.

- Remove all loose materials mechanically to ensure a sound, clean and dry concrete surface.

- Where required, the sides of the concrete joint to be cut smooth and straight with an angle grinder or diamond saw.

- Where required, the edges of the expansion joints to be provided with a fillet. Engineer/Department's representative to determine on site.
- Install a non-bituminous, non-extruding resilient joint filler where existing joint former/filler was removed.

- Install a closed cell resilient foam cord or release film or bond breaking tape before applying sealant.

- A primer coat to be applied to all surfaces, brushed well into the faces of the joint.

- Install a single component fast curing polyurethane joint sealer strictly according to the manufacturers specifications.

- All materials to be submitted to the Engineer/Department's representative for approval prior to installation.

BK 03.11. CONCRETE CRACKS

All existing concrete to be inspected to determine the extent and damage due to cracking of concrete. The cause of cracking is to be established to determine the correct remedial action to be taken. The Engineer's representative will determine the extent of repair work required, which will in most cases, require individual specifications to suit.

BK 03.11.01 Concrete crack repair procedure

(Generally used where cracking could adversely affect the structure)

The following procedure, or similar approved by the Engineer's representative to be used:

- The surface over the entire length of the crack should be wire brushed to remove laitance or any other deleterious materials from the concrete.
- If the surface of the concrete is unsound, chase/grind a vee cut into the crack.
- All debris to be removed.
- Drill holes into the crack. The size, depth and centres etc. as specified for the crack injection product to be used. Blow out holes free of drill dust.
- Install injection nipples into the holes as specified. Allow for air release holes.
- Seal the face/s with an approved epoxy.
- Pump in approved epoxy liquid to suit crack size/width.
- The above repair system to be done strictly in accordance with the manufacturers specifications and requirements and must be carried out by approved specialists or suitably trained persons.

BK 03.11.02 Concrete crack repair procedure
(Generally used for small cracks and where cracking could cause leaking thought the concrete)

The following procedure, or similar approved by the Engineer/Department's representative to be used:

- The surface over the entire length of the crack should be wire brushed to remove laitance or any other deleterious materials from the concrete.
- If the surface of the concrete is unsound, chase/grind a vee cut into the crack.
- All debris to be removed.
- Inject in an approved polyurethane 1-part joint sealant to suit crack size/width. The width of the crack must be 1.25 times the depth of the crack or in accordance with the manufacturer’s specification.
- The above repair system to be done strictly in accordance with the manufacturers specifications and requirements and must be carried out by approved specialists or suitably trained persons.

BK 03.12. SPALLED CONCRETE REPAIR

BK 03.12.01 Clean area

- The area to be repaired should first be cleaned to remove any bond breaker agents present. Pressure washing might be necessary to properly clean the area.

BK 03.12.02 Remove loose concrete

- Any loose or broken concrete must be removed. Grinding or shot blasting maybe required for proper surface preparation.
- The area surrounding the spalled concrete should also be checked for possible deterioration by tapping.
- Dust and debris should also be removed from this area.

BK 03.12.03 Clean and coat rebar

- Corrosion should be cleaned from rebar and a protective coating should be applied to avoid further corrosion.
- Any rebar in the immediate vicinity should also be checked for corrosion.

BK 03.12.04 Apply repair material

- If spalling is shallow enough it may only require a surface repair. However, for deep repair a durable and robust Sika product or admixture may be required. Steel reinforcing or dowels may be required to provide the full restoration.
- The area should also be roughened, and a suitable admixture applied.
- Once completely set a waterproofing agent or paint may need to be applied to prevent the re-occurrence of spalling.

BK 03.13. APPLICATION OF WATERPROOF COATINGS TO CONCRETE AND MASONRY SURFACES

The following procedure applies to section of concrete element or masonry walls requiring application of a waterproofing coating.

- Remove all loose and damaged concrete / masonry from the surface to receive the coating.
- Undertake any concrete / masonry repairs required on the element, as per the requirements of BK 03.09. Allow repairs to cure completely prior to commencing coating procedures.
- Remove all laitance and surface contaminants from the surface to be repaired using mechanical methods (Wire brushing or similar).
- Prepare and apply the specified coating in strict accordance with the manufacturer's specifications.
- Cure as recommended in the manufacturer's specifications.

BK 04 DETAIL OF REPAIR WORK

The Schedule of Quantities shows approximate quantities of work. Detailed instructions will be issued during construction.

BK 05 EXTERNAL BONDING OF CARBON FIBRE

BK 05.01. MATERIALS

BK 05.01.01 Adhesive

The adhesive shall be a cured epoxy resin complying with EN1504-4. The adhesive shall be a thixotropic paste, specifically designed as part of a compatible load transferring bonded system. The adhesive shall be a solvent-free, two-part epoxy. The epoxy shall have high resistance to moisture and low creep values under sustained loads.

The adhesive components shall be supplied in liquid form and in separate sealed containers. Each component shall have a different identifiable colour, which results in a distinctive homogenous colour when thoroughly mixed.

The adhesive shall mix readily to a smooth paste-like (thixotropic) consistency and it shall be suitable for spreading on surfaces ranging from horizontal to vertical and on inverted overhead surfaces.

The mixed adhesive shall be free of lumps and the components shall not separate or settle out during the workable life of the adhesive.

The toxicity of the chemicals in the components shall be low enough to enable safe usage on the construction site and in a normal workshop environment. If special ventilation is necessary, such requirements shall be clearly stated on the containers.

The adhesive shall be suitable for application to prepared steel, carbon fibre and concrete surfaces in a layer thickness of between 1,0 mm and 20 mm.

The bond stress to concrete surfaces shall exceed 3,5 MPa with failure through the concrete. Workable life shall not be less than 20 minutes at temperatures up to 20°C.

The storage life (shelf life) in the original sealed containers of both the resin and hardener shall not be less than 6 months at temperatures between 5° and 25°C.

The adhesives shall be capable of curing to the required strength at temperatures between 10°C and 30°C in relative humidities of up to 95 %. The adhesive shall cure sufficiently within three days to confer the specified mechanical properties at 20°C and shall undergo a negligible shrinkage on curing (maximum linear shrinkage of 0,1 %).

The adhesive shall be formulated to minimize moisture transport through the adhesive itself. Water absorption shall not exceed 2 % by mass after immersion for 24 hours in distilled water at 20°C.

BK 05.01.02. Carbon Fibre Plate

The carbon fibre Plate shall have the following properties:

- A volumetric fibre fraction of no less than 70 %
- A modulus of elasticity for design of no less than 205 GPa
- An ultimate tensile strength of no less than 2400 MPa
- A tensile strength at 0,8% elongation of no less than 1600 kN
- Manufactured to an ISO quality standard

BK 05.02. EXECUTION OF THE WORKS

BK 05.02.01 Preparation of concrete surfaces

The outline positions of the steel or carbon fibre plates shall be clearly marked on the receiving concrete surface. For beams narrower than 450mm, the entire beam soffit is to receive the preparation treatment.

Any cracks wider than 0,3 mm shall be pressure injected using a low viscosity epoxy resin system in accordance with the procedures specified in Section BK 03.11.

The marked concrete areas to be plated shall be wire brushed to remove all concrete laitance, surface coatings and impregnants, organic growth, bituminous residues, oil, dirt and any other surface contamination. The surface shall be sound and shall exhibit the coarse sand and aggregate texture to present a rough key to the adhesive.

The prepared surface profile shall be checked using a 1,0 m long profile edge and any areas deviating by more than 4,0 mm from the profile edge shall be marked.
Any high areas shall be removed with light scabbling or grinding equipment and low areas can be filled with the adhesive to be used for the plate bonding. Normal preparation shall not remove more than 1,0 mm of the concrete surface.

The Engineer will inspect the prepared surface to identify areas that are defective or substandard which may require additional preparation or remedial work. Repairs shall not weaken the load transfer to the concrete.

BK 05.02.02 Application of adhesive to bond surfaces

Immediately before the application of the adhesive to the prepared concrete surface, the receiving surface shall be vacuum-cleaned to remove all dust, debris, etc.

The mixed adhesive shall be trowelled onto the receiving concrete surface using plastering techniques. The adhesive shall be well worked into the grit-blasted surface to a layer thickness of approximately 2,0 mm. Skilled operators are essential due to the speed and care demanded by this phase of the work.

The adhesive shall be applied to the steel or carbon fibre bonding plates preferably with a specially profiled trowel to ensure a uniform thickness and profile across the plate width. The profile shall be such that when the plate is pushed into contact with the concrete surface the adhesive is squeezed out towards the free edges to reduce the risk of air entrapment. The minimum thickness of adhesive applied to the plate shall be 1,0 mm at the edges while the average thickness shall be 3,0 mm.

The actual thickness applied to the plate and concrete surface shall be carefully controlled to ensure that sufficient quantity is used to achieve the required final layer thickness with minimal wastage.

In order to ensure a uniform adhesive layer thickness, suitable 3,0 mm thick inert spacers may be placed along the plate at regular intervals suited to the plate stiffness.

For carbon fibre plates: Apply the carbon fibre plate and, using a roller, exert a constant pressure by moving the tool both ways in the direction of the fibres. The pressure applied shall be sufficient to just squeeze out the adhesive along the full plate perimeter. Care shall be taken to apply the pressure evenly without distortion of the plate.

Once the plate is in position, the edges must be neatly finished with a fillet of adhesive to protect the interface of the plate, the adhesive layer, the edge of the plate and the concrete against the ingress of moisture.

The support system shall be left undisturbed for a minimum period of 24 hours and the temperature variation shall be monitored during this period. Where low temperatures have resulted in insufficient strength gain, this period shall be extended.

BK 05.02.03 Finishing

Excess hardened adhesive shall be carefully ground away to the required surface profile. After installation, the entire beam (soffit and sides, where plaster has been removed) is to be replastered as follows.

- Any laitance on the beam is to be removed using wire brush techniques. All dust, loose material and other contaminants are to be removed and the surface pre-wetted using clean water. The surface shall not be allowed to dry before application of the bonding agent.
- Apply bonding agent as specified to the entire surface to be plastered. Application rates as specified by the manufacturer.
- Distribute clean sand on the tacky surface of the bonding agent in order to improve the mechanical bond between the beam and the plaster.
- Plaster and paint beam in accordance with the requirements of Project Specifications BD – Walls and BJ - Paintwork.

BK 06 MEASUREMENT AND PAYMENT

BK 06.01 MEASUREMENT AND RATES

BK 06.01.01 General inclusion of costs and specifications

Notes:

Where applicable, standard SANS 1200 measurement and payment items shall be used for Concrete (Structural) (1200 G).

All material scheduled to be removed shall be deemed to be existing damaged materials in small or large sections. All such redundant material shall become the property of the Contractor and must be removed from site immediately.

All new material shall be deemed to be in patchwork and shall be of approved equal quality, colours, profiles, thickness, etc and shall in all cases match the existing materials and shall be fixed (internally or externally) to existing material, frames or surfaces.

All replacement, removal and repair work shall be done carefully as to not damage any adjacent or other material or work. Any damage to other or adjacent materials or areas caused by the negligence of the Contractor shall be repaired by him free of charge.

All work scheduled to be replaced shall be deemed to include for the careful removal of the damaged existing material as a whole or partly, as specified, for the cleaning and preparation of the remaining surface(s), frames, etc as well as for the new material scheduled or specified to replace the damaged material.

All work scheduled to be removed, hacked off, or taken out shall be deemed to include the cleaning and preparation of the remaining surfaces, areas where material were removed, or remaining work to receive new material or work specified.

BK 06.02 SCHEDULED ITEMS

BK 06.02.01 Crack Injection

(a) Establishment on site for crack injection.....Sum

The unit of measurement shall be the lump sum.

The tendered sum shall include full compensation for the establishment on site and the subsequent removal of all special plant and equipment required for the pressure injection of

epoxy resin into cracks and any additional plant, specialist access structures and work platforms required for the execution of the work.

The lump sum shall be paid as follows:

i. 75 % when all equipment is established on site and the first crack injection work has been satisfactorily completed according to the approved method statement, and
ii. 25 % after all crack injection work has been satisfactorily completed and the equipment is removed from site.

(b) Preparation of cracks for crack injection..... m

The unit of measurement shall be the metre (m) of crack prepared for crack injection by pressure or gravity means.

The tendered rate shall include full compensation for all labour, materials, equipment and plant as well as for all work and incidentals required to prepare, clean and prime all surfaces, seal and cure the designated cracks (including for wastage), and install and operate injection ports, all in accordance with the project specification and the repair material manufacturer's instructions.

(c) Crack injection with epoxy resin (Details to be specified).....litres

The unit of measurement shall be the litre of adhesive used as approved by the Engineer. The volume shall be determined from the dimensions indicated on the drawings or as authorized by the Engineer following the detailed inspection if the prepared surfaces. Any overcut or excessive preparation resulting in additional adhesive quantities shall not be measured.

The tendered rate shall include full compensation for all labour, materials, equipment, plant and incidentals required for the supply, mixing and application of the adhesive to the prepared concrete surface. It shall also include the certification testing and quality assurance monitoring and testing by the Contractor, as well as any wastage of the mixed or spilled materials and the disposal thereof. The tendered rate shall also include all costs arising from any clean-up and finishing actions required due to spillage or poor workmanship.

(d) Site and core tests ..... Provisional Sum

The stated provisional sum for site and core testing shall be employed to cover the cost of specific tests to be carried out as ordered by the Engineer.

BK 06.02.02 <u>External bonding of carbon fibre plates</u>

(a) Establishment on site for carbon fibre strengthening.....Sum

The unit of measurement shall be the lump sum.

The tendered sum shall include full compensation for the establishment on site and the subsequent removal of all special plant and equipment required for the external bonding of carbon fibre plates and any additional plant, specialist access structures and work platforms required for the execution of the work.

(b) Preparation of concrete surfaces for plate bonding..... m^2

The unit of measurement shall be the square metre of concrete surface prepared.

The tendered rate shall include full compensation for all labour, materials, plant and equipment required for the measurement, recording and working on the concrete member, the surface preparation of the concrete surface and cutting of slots if required.

(c) Adhesive (Type to be specified) ..... litre

The unit of measurement shall be the litre of adhesive used as approved by the Engineer. The volume shall be determined from the dimensions indicated on the detail drawings or as authorized by the Engineer following the detailed inspection of the prepared surfaces. Any

overcut or excessive preparation resulting in additional adhesive quantities shall not be measured.

The tendered rate shall include full compensation for all labour, material, equipment, etc., required for the supply, mixing and application of the adhesive to the prepared concrete and carbon fibre surfaces. It shall also include the certification testing and quality assurance monitoring and testing by the Contractor, as well as any wastage of mixed or spilled materials and the disposal thereof.

The rate shall also include all costs arising from any clean-up and finishing actions required due to spillage or poor workmanship. The tendered rate shall include full compensation for all labour, materials, plant and equipment required for the measurement, recording and working on the concrete member, the surface preparation of the concrete surface.

(d) Plates (Type to be specified) ..... m

The unit of measurement shall be the metre of carbon fibre plates bonded to the concrete member.

The tendered rate shall include full compensation for all labour, materials, plant, equipment etc., required for the fabrication and supply of the carbon fibre plates on site, the placing and fixing of the carbon fibre plates into position including all ties, fasteners, waste, etc. complete as per details on the drawings.

It shall also include all costs arising from the surface preparation, carbon fibre bonding surface, as well as temporary support required during installation.

(e) Apply bonding agent (Type to be specified) to (member to be specified)..... m^2

The unit of measurement shall be the lump sum.

The unit of measurement shall be the square metre of surface area covered by the bonding agent measured in place.

The tendered rate shall include full compensation for all labour, materials, plant and equipment required to prepare the surfaces and to supply and apply the bonding agent to the required film thickness.

BK 06.02.03 <u>Spall Repairs</u>

(a) Preparation for and repair of spalled and damaged concrete using cementitious repair mortar

(i) Mortar type to be specified .....litre

The unit of measurement shall be the litre of mortar measured in place, of specified class, used for the repair of specified concrete defects..

The tendered rate shall include full compensation for all labour, materials, equipment and plant as well as for all work and incidentals required to break out, prepare, prime all surfaces, apply repair mortars and cure the designated areas (include for wastage) all in accordance with the project specification and the repair material manufacture’s procedures, methods and specifications.

In addition, the tendered rates shall make full provision for all efforts to remove existing concrete behind the reinforcement with inadequate cover, and to force the reinforcement deeper into the existing member. The tendered rates shall cover all the cleaning and preparation of all surfaces in accordance with the supplier specifications, inclusive of the cleaning and treatment of existing reinforcement steel.

BK 06.02.04 Application of waterproofing to concrete and masonry elements

(a) Preparation for and application of waterproofing coating

(i) Coating type to be specified ..... m^2

The unit of measurement shall be the square metre of coating measured in place, of specified type, used for the coating of concrete and masonry surfaces.

The tendered rate shall include full compensation for all labour, materials, equipment and plant as well as for all work and incidentals required to prepare all surfaces, apply coatings and cure the designated areas (include for wastage) all in accordance with the project specification and the repair material manufacture's procedures, methods and specifications.

TECHNICAL SPECIFICATION

CB STORM WATER DRAINAGE

CONTENTS

CB 01 SCOPE

This specification covers the materials, equipment, methods, testing and work required for the corrective maintenance and servicing of existing stormwater drainage systems. It covers both surface and underground drainage systems.

CB 02 STANDARD SPECIFICATIONS

CB 02.01 GENERAL STANDARD SPECIFICATIONS, REGULATIONS AND CODES

The latest edition, including all amendments up to date of tender, of the following specifications, publications and codes of practice shall be read in conjunction with this specification and shall be deemed to form part thereof:

Earthworks (pipe trenches) SANS 1200 CB - Gabions and pitching Concrete (structural)
Bedding (pipes) SANS 1200 DK - Kerbing and channelling
SANS 1200 G -
SANS 1200 LB -
SANS 1200 LC -
SANS 1200 MK -

CB 02.02 OCCUPATIONAL HEALTH AND SAFETY

The Contractor shall be required to comply with the Occupational Health and Safety Act 85 of 1993, Construction Regulations 2014 and related regulations. Non- compliance with these regulations, in any way whatsoever, will be adequate reason for suspending the Works.

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CB 02.03 MANUFACTURERS' SPECIFICATIONS, CODES OF PRACTICE AND INSTALLATION INSTRUCTIONS

All equipment and materials shall be installed, serviced and repaired strictly in accordance with the manufacturers' specifications, instructions and codes of practice.

CB 02.04 MUNICIPAL REGULATIONS, LAWS AND BY-LAWS

All municipal regulations laws, by-laws and special requirements of the Local Authority shall be adhered to unless otherwise specified.

CB 03 OPERATING AND MAINTENANCE MANUALS

No operating and maintenance manuals will be developed for this section.

The contractor shall use the Maintenance Control Plan (see SA Maintenance) to schedule routine preventative maintenance activities.

CB 04 EXECUTION OF REPAIR WORK

CB 04.01 GENERAL

The Contractor shall investigate and inspect all areas of the installation to confirm the extent of the repair work required and shall report to the Engineer. The Engineer will thereafter indicate any areas to be repaired and shall instruct the Contractor with regard to the repair work to be done.

At the start of the deferred maintenance contract all the systems and installations shall be repaired as specified in the Particular Specification. This repair work shall include but not be limited to the details specified in the Particular Specification.

All repair work shall be executed using approved materials and equipment suitable to the systems and/or installations they serve.

All materials and equipment shall comply fully with the requirements as specified for each installation.

The said repair work shall be executed in accordance with the relevant codes of practice, standards, regulations, municipal laws and by-laws, manufacturer's specifications and codes of practice and all additional and particular specifications included in this document.

All new, materials and systems shall be furnished with a written guarantee with a defects liability period as state din the contract data from date of completion of repair work. These guarantees shall be furnished in favour of the University of Cape Town. On completion of the required and specified repair work the systems, installations and equipment shall be commissioned and handed over to the satisfaction of the Engineer.

Repair work items for the stormwater drainage systems shall be categorised under the following headings:

(a) Prefabricated culvert installation and repair of existing culverts and structures;

(b) Cleaning of prefabricated culverts;

(c) Concrete channel construction and repair of existing channels;

(d) Cleaning of concrete drains and channels;

(e) Cleaning of earth channels;

(f) Construction and repair of brickwork inlet structures;

(g) Provision of lockable storm water grid inlets;

(h) Cleaning of pipelines.

CB 04.02 PREFABRICATED CULVERT INSTALLATION AND REPAIR OF EXISTING CULVERTS AND STRUCTURES

This section covers the work in connection with the construction of prefabricated pipe and portal culverts and stormwater structures such as manholes, grid inlets and the like.

It also covers the removal and replacement of damaged and broken prefabricated culverts, as well as repairs to existing culverts and stormwater structures.

CB 04.02.01 Construction

Prefabricated culverts shall be constructed or replaced in accordance with the specifications at the locations indicated by the Engineer.

(a) Excavation

The width of the excavation shall be sufficient to allow the proper laying, bedding and backfilling of culverts. The widths of the excavation for each type and size of culvert shall be as set out in SANS 1200 DB.

The depth of the excavation for each type and size of culvert shall depend on site conditions and the amount by which the excavation is to exceed the proposed level of the invert of the culvert and shall be sufficient to allow the type and thickness of bedding material instructed by the Engineer.

Where excavation is to be carried out through asphalt premix or concrete, the asphalt/concrete shall be cut neatly and vertically with approved sawing equipment before the asphalt/concrete is removed.

Excavations shall commence from the outlet end of culverts to be installed.

(b) Classification of excavation

All excavations shall be classified as follows for payment purposes:

(i) Hard material

Material which cannot be excavated except by drilling and blasting, or with the use of pneumatic tools or mechanical breakers, and boulders exceeding 0,10 m³ shall be classified as hard material.

Where more than 40 % of any material (by volume) consists of boulders each exceeding 0,10 m³ in size, the material shall be classified as hard material.

(ii) Soft material

All material not classified as hard material shall be classified as soft material.

Notwithstanding the above classification, all material excavated from previously constructed fills, subgrades and subbases shall be classified as soft material.

(c) Disposal of excavated material

Where excavated material does not comply with the requirements for backfilling material as specified or is surplus to backfilling requirements, such excavated material shall be removed from the site and disposed of.

Material suitable for use in the works, however, shall be used as prescribed.

(d) Removal of damaged culverts

Where indicated by the Engineer damaged sections of prefabricated culverts shall be completely removed and replaced with new units.

Excavation shall be carried out as described for new culvert installation and the excavated material shall be, if suitable, preserved for backfilling. The damaged culvert units shall be disposed of.

(e) Laying of concrete pipe culverts

Concrete pipe culverts shall be laid on class A or B bedding as directed by the Engineer. The inside of the culverts shall be smooth and without any displacement and all pipes shall be laid true to line and level with a minimum slope of 2 % or as directed by the Engineer.

(i) Class A bedding - see SANS 1200 LB

(ii) Class B bedding - see SANS 1200 LB

(iii) Rock foundation

Where rock, shale or hard material is encountered on the bottom of excavations a bed of fine material as required for class B bedding shall be placed before laying the pipe.

(iv) Concrete casing

Where ordered by the Engineer a pipe shall be encased in concrete according to the Engineer's instructions.

(f) Laying of concrete portal culverts

Portal culverts shall be laid on prefabricated floor slabs. A layer of fine-grained material of at least 75 mm thick shall be placed on the bottom of the excavation, levelled, compacted and trimmed to line and grade to form a bed to receive the precast slabs.

The portal portions of portal culverts shall be placed accurately and symmetrically on the floor slabs with a thin layer of mortar of one part of cement and six parts of sand between the contact surfaces to ensure a firm and uniform support.

(g) Extension of existing culverts

Where existing culverts require extension or where damaged sections are replaced the new sections shall be placed at the same grade and, where it joins the existing structure, at the same level as the existing structure.

Any sections of existing wing walls, approach slabs and head walls which may obstruct any new work shall be demolished and removed. The demolition and reconstruction of new inlet and outlet structures shall be paid for under the relevant sections in the specification.

(h) Construction of culverts in half widths in existing roads

To allow the free flow of traffic at all times the culverts shall be constructed in half widths. The downstream section shall be constructed first and the end of the excavation adjoining the traffic lane shall be properly supported to prevent displacement from occurring.

(i) Repairing of cracks and joints

Where instructed by the Engineer cracks in existing culverts and culvert joints which have opened shall be caulked with material specified in the Particular Specification.

(j) Backfilling of prefabricated culverts

The backfill material shall be material selected from the excavation mixed with 80 kg Portland cement with every cubic metre of excavated material.

Generally the backfill material shall be a sandy material, but may contain larger particles up to 38 mm and shall have a plasticity index not exceeding 12.

In the case of concrete pipe culverts on class B bedding the backfilling material shall be tamped in under the flanks of the culverts to provide a uniform bedding, all to the satisfaction of the Engineer.

Backfilling alongside and over the culverts to the underside of the pavement layers shall be placed at optimum moisture content and compacted to a minimum of 90 % of modified AASHTO density in layers not exceeding 150 mm after compaction. Where approved by the Engineer, testing may be done with a dynamic cone penetrometer (DCP). The average penetration rate recorded after every 5 blows for each layer shall not exceed 50. The full depth of a layer shall be tested.

Backfilling shall be carried out simultaneously and equally on both sides of a culvert to prevent unequal lateral forces from occurring and the ends of culverts shall be protected to prevent the backfill material from spilling beyond the required levels.

(k) Reinstatement of pavement layers

Unless otherwise instructed by the Engineer the pavement layers shall be reinstated as follows:

(i) Selected layers shall be of at least a G5 quality and shall be compacted to at least 93 % of modified AASHTO density.

(ii) Material for the subbase layers shall be stabilized with 3 % cement and compacted to 95 % of modified AASHTO density, and shall be at least a G5 quality.

(iii) The material for the base layer shall be stabilized with 5 % cement and compacted to at least 97 % of modified AASHTO density, and shall be at least a G3 quality.

(iv) The surfacing layer shall consist of a medium continuously graded asphalt compacted to 94 % of Marshall density. The thickness of the surfacing layer shall be at least 25 mm. A 60 % cationic emulsion shall be applied at 0,4 litre/m² to the top of the base layer before the surfacing layer is placed.

The soil cement shall be mixed on site with suitable concrete mixers and the water and cement contents shall be carefully controlled.

(l) Repair of stormwater manholes, grid inlets and the like

Repair work will be undertaken on the structures indicated on the drawings, or as directed by the Engineer. All repair work will comply with the construction and quality requirements of SANS 1200 LE.

CB 04.02.02 Quality standard

Culverts shall be constructed true to lines and levels with the inside smooth and without any displaced joints.

CB 04.02.03 Materials

The prefabricated culvert units shall be factory produced by a reputable manufacturer of these units and shall comply with the following requirements:

(a) Prefabricated concrete pipe culvert units

Prefabricated concrete pipe culvert units shall comply with the requirements of SANS 677. Pipes with ogee joints shall be provided, unless otherwise specified. Pipes subjected to traffic loadings shall be class 100 D; all other pipes shall be class 50 D.

(b) Portal prefabricated concrete culvert units

Portal prefabricated concrete culvert units shall comply with the requirements of SANS 986.

(c) Other types of prefabricated culverts

If required, other types of prefabricated culverts will be specified in the Particular Specification.

(d) Manhole covers, grid inlets, etc

Manholes, grid inlets, etc, shall have covers and frames complying with SANS 558.

CB 04.03 CLEANING OF PREFABRICATED CULVERTS

The work involved under this section is the removal of silt and debris from prefabricated culverts including the cleaning of inlet and outlet structures.

CB 04.03.01 Construction

Prior to cleaning any prefabricated culverts, the Contractor shall arrange with the Engineer for an inspection of the stormwater network. The Contractor shall provide adequate equipment, such as torches, lights, mirrors, etc, to enable a basic visual inspection of all the culverts. Based on this inspection, the Engineer will instruct the Contractor as to which sections of the network require cleaning.

Material removed from the culverts shall be disposed of where instructed by the Engineer. Rubble and waste material shall be disposed of at the nearest appropriate solid waste disposal site, unless otherwise directed by the Engineer.

The Contractor must ensure that all material being removed is removed before or at the nearest accessible downstream structure. No additional payment will be made for the removal of material which, as a result of cleaning operations, find its way into a previously clean section of the culvert network.

CB 04.03.02 Quality standard

Prefabricated culverts shall be cleaned of all silt and debris such that all surfaces are clearly visible and accessible for inspection.

All spoil material shall be spread neatly and shall not wash back into drainage trenches.

The size of the culverts for the different categories will be determined as follows:

(a) For pipe culverts - diameter

(b) For portal culverts - width.

CB 04.04 CONCRETE CHANNEL CONSTRUCTION AND REPAIR OF EXISTING CHANNELS

This section covers the construction of new concrete lined drains where required and the maintenance of existing concrete drains. It includes the construction of kerb and channel combinations and repairs where required.

CB 04.04.01 Construction

The Engineer will indicate the locations where new drains are to be constructed to improve drainage and shall instruct where repairs to existing drains are to be carried out.

Construction of the following type of concrete drains may be required:

(a) Concrete lining to open drains
(b) Concrete pipes
(c) Kerbing channeling combination.

Concrete drains shall be constructed in accordance with the details shown on the drawings or as directed by the Engineer.

(a) Excavation and preparation of bedding

The excavations shall be neatly trimmed to lines and levels so as to permit the accurate construction of the concrete linings. All loose material shall be well rammed at the optimum moisture content for the material used.

Where excavations are in hard material, overbreak shall be backfilled with concrete of the same class as specified for the lining.

In the case of kerbs and channels the trenches shall be excavated to the required depths and the bedding material shall be well rammed before placing the concrete.

Where wash-aways have occurred, any cavities or voids in the foundation material must be backfilled in layers not exceeding 150 mm in thickness and compacted to 90 % of modified AASHTO density.

(b) Concrete linings

Concrete lining of open drains shall be cast in situ only and the exposed surfaces shall be given a class U2 (wood-floated) surface finish.

Sealed joints in concrete shall be in accordance with the details indicated on the drawings and joints shall be painted with a coat of approved bituminous emulsion containing 60 % of pure bitumen by mass.

Expansion joints shall be made in accordance with the drawings.

(c) Half-round channels

Cast in situ half-round channels shall be constructed in accordance with the drawings, or to fit existing sections.

(d) Kerbing and channeling

Kerbing shall include barrier kerbs, mountable and semi-mountable types. All the elements shall be prefabricated units with cast in situ channeling unless otherwise specified by the Engineer.

Kerbing and channeling shall be laid on the approved bedding with close joints filled with 3:1 sand: cement mortar not exceeding 10 mm in thickness and neatly pointed with a pointing trowel. Kerbing shall be propped with class 15/19 in-situ concrete at each joint (size: 300 mm long x 200 mm wide x 80 % of kerb height).

(e) Concrete cast against existing surfaced edges

Where concrete lining or concrete channeling in kerb and channel combinations is to be cast against existing surfacing the edge shall first be cut, before excavation, with approved sawing equipment to provide a neat straight edge. Care shall be taken during the placing of the concrete not to spill concrete onto the adjacent surfacing. Any concrete stains shall be removed by the Contractor at his own expense.

(f) Reinstatement of damaged existing structures

Damaged existing structures shall be demolished to the extent directed by the Engineer on site and the resulting debris shall be spoiled.

The reinstatement of damaged sections shall be carried out to the same standards prescribed for new construction and shall be paid for under the relevant items scheduled for new structures.

Provision shall be made for the reinstatement of existing damaged prefabricated concrete half round channels.

(g) Inlet and outlet structures

The structures shall be constructed in accordance with the requirements specified in the relevant section in this specification.

CB 04.04.02 Quality standard

The drains shall be constructed neatly to the dimensions shown on the drawings and within the specified dimensional and alignment tolerances.

Repairs to drains shall be in uniformity with existing structures.

CB 04.04.03 Materials

(a) Concrete

Concrete for the various structural components shall comply with the class detailed on the drawings. Concrete in channel linings shall be class 20/19.

(b) Steel reinforcement

(i) Steel bars

Steel reinforcing bars shall comply with the requirements of SANS 920.

(ii) Welded steel mesh

Welded steel mesh shall comply with the requirements of SANS 1024.

CB 04.05 CLEARING OF CONCRETE DRAINS AND CHANNELS

This section covers the work in connection with the removal of silt, debris and vegetation causing obstruction to flow in drains and channels constructed from any type of material excluding earth drains and channels.

CB 04.05.01 Construction

Concrete channels shall be cleaned where instructed by the Engineer. Generally, channels shall be cleaned when depth of silt in invert exceeds 100 mm, or when other foreign matter is present.

Material removed from channels shall either be loaded and removed from the site or disposed of adjacent to channels where it cannot be washed back into the channel as directed by the Engineer.

Where material is spoiled adjacent to channels the Contractor shall ensure that the material is spread neatly and well clear of the top of the channels where it will not wash back. Material removed from kerb and channel combinations, side drains or from other channels where directed by the Engineer shall be transported to spoil.

Vegetation growing in channel joints and cracks shall be removed with roots to prevent regrowth.

Vegetation growing over channels from the edges shall be slashed at the concrete edges and disposed of. Undesirable vegetation shall be removed with roots and spoiled where directed by the Engineer.

CB 04.05.02 Quality standard

Concrete drainage channels shall be clear of any obstruction such that the concrete surfaces are clearly visible.

CB 04.06 CLEANING OF EARTH CHANNELS

This section covers the work involved in cleaning of all earth drains and channels, repairs to damaged earth drains and channels, as well as construction and repairs of banks and dykes.

CB 04.06.01 Execution of work

(a) Drains

Earth side drains and channels shall be cleaned of all debris, silt and vegetation when instructed by the Engineer.

Silt and debris excavated from the drains shall be deposited and spread neatly in close proximity of the drains where it will not wash back.
Scoured and eroded sections of drains shall be backfilled with suitable material obtained from the side of the road or from suitable sources indicated by the Engineer. The backfill material shall be compacted at the optimum uniform moisture content in layers not exceeding 100 mm after compaction. The Contractor shall use suitable compaction equipment to produce repairs that will not erode or scour again.

If in the opinion of the Engineer drains require protective covering against scouring and erosion, such work shall be executed in accordance with the relevant section of this specification.

(b) Construction and repair of banks and dykes

Material for the construction and repair of banks and dykes shall be an approved soil or gravel obtained from sources approved by the Engineer. It shall be positioned in such a way that water will flow on the natural ground and against the bank.

Banks and dykes shall be properly compacted in layers not exceeding 150 mm in thickness. If approved by the Engineer, mitre banks may also be constructed of hand-packed stone, provided that the interstices are filled with an approved cohesive soil.

CB 04.06.02 Quality standard

Drainage channels shall be clear of any obstructions and no scouring, erosion or pooling shall be evident.

Existing fill and cut slopes and invert grades of drains shall be maintained.

CB 04.07 CONSTRUCTION AND REPAIR OF BRICKWORK INLET STRUCTURES

CB 04.07.01 Reinstatement of damaged existing structures

Damaged existing structures shall be demolished to the extent indicated by the Engineer on site and the resulting debris spoiled.

The reinstatement of damaged sections shall be carried out to the same standards prescribed for new construction and shall be paid for under the relevant items scheduled for new structures.

CB 04.07.02 Lowering of inlet structures

Existing structures which are not functional due to the inlet being above the surrounding pavement level or ground level shall be demolished to the extent indicated by the Engineer and reinstated at the correct level to the same standard prescribed for new construction.

CB 04.08 PROVISION OF LOCKABLE STORMWATER GRID INLETS

Stormwater inlet structures within the complex fence shall be provided with lockable grids. These shall be in the form of a steel bar secured to the base of the catch pit and long enough to just protrude through the inlet grid. There shall be a hole in the end of the bar to allow a padlock to be positioned such that the grid will be immovable.

The steel bar shall be treated to avoid corrosion.

Padlocks shall be provided for all grid inlets. They shall be of a type suitable for outdoor use, or as specified in the Project Specifications.

CB 04.09 CLEANING OF PIPELINES

The work under this section involves the removal of silt and debris from pipelines, including the cleaning of inlet and outlet structures.

CB 04.09.01 Construction

Before cleaning any pipelines, the Contractor shall arrange with the Engineer for an inspection of the stormwater network. The Contractor shall provide adequate equipment such as torches, lights, mirrors and TV surveillance equipment, etc, to

enable a basic visual inspection of all pipes. Based on this inspection, the Engineer will instruct the Contractor as to which sections of the network require cleaning and where detailed inspections are required.

Material removed from the pipes shall be disposed of where instructed by the Engineer. Rubble and waste material shall be disposed of at the nearest appropriate solid waste disposal site, unless directed otherwise by the Engineer.

The Contractor shall ensure that all material is removed at the nearest accessible structure. No additional payment will be made for the removal of material from previously cleaned sections of the network.

CB 04.09.02 Quality standard

Pipes shall be cleaned of all silt and debris.

All spoil material shall be spread neatly to ensure that it will not return to the drainage trenches.

The pipe sizes for the different categories will be determined by diameter.

CB 05 MAINTENANCE

Maintenance does not form part of this contract.

CB 06 MEASUREMENT AND PAYMENT

CB.01 PREFABRICATED CULVERT INSTALLATION AND REPAIR OF EXISTING CULVERTS AND STRUCTURES

CB.01.01 Excavation:

(a) Excavation of soft material within the following depth ranges below the surface level:

(i) 0 m up to and including 1,5 m ..... Unit: cubic metre (m^3)

(ii) Exceeding 1,5 m up to and including 3,0 m ..... Unit: cubic metre (m^3)

(iii) Exceeding 3,0 m up to and including 4,5 m ..... Unit: cubic metre (m^3)

(iv) Etc in increments of 1,5 m

(b) Excavating hard material irrespective of depth .....Unit: cubic metre (m^3)

The unit of measurement shall be the cubic metre of material excavated within the specified dimensions, authorised by the Engineer in each case. Excavation in excess of widths specified or authorised shall not be measured for payment.

Irrespective of the total depth of the excavation, the quantity of material in each depth range shall be measured separately.

When measuring excavation for the removal of existing culverts, the volume occupied by the culvert shall not be subtracted from the calculated volume of excavation.

The tendered rates shall include full compensation for all excavation (including around structures), levelling, temporary timbering, shoring and strutting, for

preparing the bottom of the excavation for the culvert beds, the disposal of unstable material unsuitable for backfilling, keeping the excavation safe, dealing with any surface or subsurface water and for any other operations necessary for completing the work as specified.

Payment shall distinguish between soft and hard material.

CB.01.02 Backfilling and reinstatement of pavement layers:

(a) *In situ* fill or cut material compacted to 90 % of modified AASHTO density.....Unit: cubic metre (m³)

(b) Selected layers compacted to 93 % of modified AASHTO density .....Unit: cubic metre (m³)

(c) Cement stabilized subbase layers compacted to 95 % of modified AASHTO density.....Unit: cubic metre (m³)

(d) Cement stabilized base layers compacted to 97 % of modified AASHTO density Unit: cubic metre (m³)

The unit of measurement for CB.01.02(a) and (b) shall be the cubic metre of gravel material placed and compacted according to authorised dimensions on drawings.

The unit of measurement for CB.01.02(c) and (d) shall be the cubic metre of stabilized material placed and compacted according to authorised dimensions.

The tendered rates shall include full compensation for procuring and furnishing, placing, compaction and finishing of materials, labour, tools and equipment for executing the work to the satisfaction of the Engineer.

CB.01.03 Prefabricated culverts:

(a) On class A bedding (type and diameter indicated) ..... Unit: metre (m)

(b) On class B bedding (type and diameter indicated) ..... Unit: metre (m)

(c) Portal culverts with prefabricated floor slabs (type and size indicated)..... Unit: metre (m)

The unit of measurement for prefabricated culverts shall be the metre of culvert laid. The length shall be measured along the soffit of the culvert.

The tendered rates shall include full compensation for providing, testing, loading, transporting and unloading the culverts, for providing and placing the bedding material where required, and for the installation, laying and jointing of the culverts as specified including cutting them on the site and removing any waste.

CB.01.04 Cast *in situ* concrete and formwork in stormwater structures:

(a) Class 20 concrete .....Unit: cubic metre (m³)

(b) Class 25 concrete Unit: cubic metre (m³)

The unit of measurement shall be the cubic metre of concrete in place. Quantities shall be calculated from the dimensions shown on the drawings or as authorized.

The tendered rates shall include full compensation for procuring and furnishing all the materials, storing the materials, providing all plant, mixing, transporting, placing and

compacting the concrete, forming the inserts, construction joints and contraction joints, curing and protecting the concrete, repairing defective surfaces and finishing the concrete surface as specified.

CB.01.05 Replacement of manhole covers, grid inlets, etc

(a) SANS 558 Type 4 - covers, grids, etc:

(i) Maximum dimension up to and including 300 mm.....Unit: number

(ii) Maximum dimension 301 mm to 600 mm.....Unit: number

(iii) Maximum dimension 601 mm to 900 mm.....Unit: number

(iv) Maximum dimension over 900 mm.....Unit: number

(b) SANS 558 Type 4 - frames only for covers, grids, etc:

(i) Maximum dimension up to and including 300 mm.....Unit: number

(ii) Maximum dimension 301 mm to 600 mm.....Unit: number

(iii) Maximum dimension 601 mm to 900 mm.....Unit: number

(iv) Maximum dimension over 900 mm.....Unit: number

(c) SANS 558 Type 2A - covers, grids, etc:

(i) Maximum dimension up to and including 300 mm.....Unit: number

(ii) Maximum dimension 301 mm to 600 mm.....Unit: number

(iii) Maximum dimension 601 mm to 900 mm.....Unit: number

(iv) Maximum dimension over 900 mm.....Unit: number

(d) SANS 558 Type 2A - frames only for covers, grids, etc:

(i) Maximum dimension up to and including 300 mm.....Unit: number

(ii) Maximum dimension 301 mm to 600 mm.....Unit: number

(iii) Maximum dimension 601 mm to 900 mm.....Unit: number

(iv) Maximum dimension over 900 mm.....Unit: number

The unit of measurement shall be the number of covers or frames installed. The classification of the size of each cover or frame will be based on the nominal dimensions of the unit and not on the actual dimensions.

The tendered rates shall include full compensation for procuring, furnishing and placing the new covers, grids and/or frames. The tendered rates shall also include full compensation for removing and disposing of the damaged covers, grids and/or frames.

CB.02 CLEANING OF PREFABRICATED CULVERTS

CB.02.01 Cleaning of prefabricated culverts and inlet structures (average depth of material removed not more than 100 mm):

(a) Prefabricated concrete pipes and portal culverts with maximum cross sectional dimension of:

(i) Up to and including 500 mm ..... Unit: metre (m)

(ii) 501 mm to 750 mm ..... Unit: metre (m)

(iii) 751 mm to 950 mm ..... Unit: metre (m)

(iv) 951 mm to 1250 mm ..... Unit: metre (m)

(v) 1251 mm to 1500 mm ..... Unit: metre (m)

(vi) 1501 mm to 2100 mm ..... Unit: metre (m)

(b) Prefabricated corrugated metal culverts with maximum cross sectional dimension of:

(i) Up to and including 500 mm ..... Unit: metre (m)

(ii) 501 mm to 750 mm ..... Unit: metre (m)

(iii) 751 mm to 950 mm ..... Unit: metre (m)

(iv) 951 mm to 1250 mm ..... Unit: metre (m)

(v) 1251 mm to 1500 mm ..... Unit: metre (m)

(vi) 1501 mm to 2100 mm ..... Unit: metre (m)

The unit of measurement shall be the metre of culvert cleaned (depth of material removed is on average not more than 100 mm), measured once along the soffit of the culvert. For multiple culverts each individual culvert shall be measured separately.

The tendered rates shall include full compensation for removing the material, for disposing of the material in an appropriate manner and ensuring that the material will not wash into drainage trenches.

CB.02.02 Cleaning of prefabricated culvert and inlet and outlet structures (average depth of material removed is more than 100 mm):

(a) Prefabricated concrete pipes and portal culverts with maximum cross sectional dimension of:

(i) Up to and including 500 mm ..... Unit: metre (m^3)

(ii) 501 mm to 750 mm ..... Unit: metre (m^3)

(iii) 751 mm to 950 mm ..... Unit: metre (m^3)

(iv) 951 mm to 1250 mm ..... Unit: metre (m^3)

(v) 1251 mm to 1500 mm ..... Unit: metre (m^3)

(vi) 1501 mm to 2100 mm ..... Unit: metre (m^3)

(b) Prefabricated corrugated metal culverts with maximum cross sectional dimension of:

(i) Up to and including 500 mm ..... Unit: metre (m^3)

(ii) 501 mm to 750 mm ..... Unit: metre (m^3)

(iii) 751 mm to 950 mm ..... Unit: metre (m^3)

(iv) 951 mm to 1250 mm ..... Unit: metre (m^3)

(v) 1251 mm to 1500 mm ..... Unit: metre (m^3)

(vi) 1501 mm to 2100 mm ..... Unit: metre (m^3)

The unit of measurement shall be the cubic metre of material removed (depth of material removed is on average more than 100 mm). The quantity of material to be removed shall be measured in place for each individual culvert.

The tendered rates shall include full compensation for removing the material from the culvert, for loading the material onto trucks, for transporting the material within a free- haul distance of 1,0 km and for spoiling the material as specified.

CB.02.03 Provision of equipment for visual inspection of underground culvert network..... Unit: lump sum

The tendered sum shall include full compensation for the provision of suitable equipment, such as torches, lights and mirrors, etc, to enable a basic visual inspection of the culvert network.

CB.02.04 Visual inspection of underground culvert network ..... Unit: metre (m)

The tendered rate shall include full compensation for all processes necessary to complete a thorough check of the culvert network, including lifting and replacing manhole covers, using relevant equipment and any clearing necessary to allow the visual inspection to proceed.

CB.03 CONCRETE CONSTRUCTION AND REPAIR

CB.03.01 Excavation:

(a) Soft material .....Unit: cubic metre (m^3)

(b) Hard material.....Unit: cubic metre (m^3)

The unit of measurement shall be the cubic metre of material excavated in accordance with the authorised dimensions measured in place.

The tendered rates shall include full compensation for all plant, labour and tools necessary for excavating the material to the required dimensions, including trimming the excavation before placing concrete, disposing of the material from the site.

CB.03.02 Cast *in situ* concrete:

(a) Class 20 concrete .....Unit: cubic metre (m^3)

(b) Class 30 concrete .....Unit: cubic metre (m^3)

The unit of measurement shall be the cubic metre of concrete placed in situ. The quantity shall be calculated in accordance with the authorised dimensions.

The tendered rates shall include full compensation for procuring and furnishing all material and for all work necessary for mixing, placing and finishing the concrete to the authorised dimensions, including providing and erecting of formwork, for sawing of asphalt layers and for providing expansion and contraction joints as included on

drawings or as instructed by the Engineer.

CB.03.03 Backfill below channels.....Unit: cubic metre (m^3)

The unit of measurement shall be the cubic metre of backfill as may be instructed by the Engineer to be placed below channels.

The tendered rate shall include full compensation for furnishing, procuring, placing and compacting concrete.

CB.03.04 Precast concrete kerbing:

(a) Supply and install (type indicated) ..... Unit: metre (m)

(b) Install only (type indicated)..... Unit: metre (m)

The unit of measurement shall be the metre of precast kerbing complete as constructed, measured along the face of the kerb.

The tendered rate for CB.03.04(a) shall include full compensation for preparing of bedding, furnishing and installing all materials and supporting the kerb with in situ concrete, for backfilling behind kerbs, all complete as specified.

The tendered rate for CB.03.04(b) shall include full compensation for preparing of bedding, furnishing and installing all materials and reinstalling existing kerbing, all complete as specified.

CB.03.05 Steel reinforcement:

(a) Mild steel bars .....Unit: ton (t)

(b) High-tensile steel bars.....Unit: ton (t)

(c) Welded steel mesh..... Unit: kilogram (kg)

The unit of measurement for steel bars shall be the ton of reinforcing, and kilogram of welded steel in place in accordance with the drawings or as authorised. Ties, stools and other steel used for positioning the reinforcing steel shall be measured as steel reinforcement.

The tendered rate shall include full compensation for supplying, delivering, cutting, bending, welding, trial weld joints, placing and fixing the steel reinforcement including all tying wire, spacers and waste.

CB.03.06 Sealed joints in concrete lining open drains (type indicated)..... Unit: metre (m)

The unit of measurement shall be the metre of completed joint of each size and type.

The tendered rate shall include full compensation for supplying all material and for all labour, tools, formwork and incidentals necessary for sealing the joint as shown on the drawings or specified in the Project Specifications.

CB.03.07 Demolition and removal of damaged existing structures:

(a) Plain concrete .....Unit: cubic metre (m^3)

(b) Reinforced concrete .....Unit: cubic metre (m^3)

The unit of measurement for CB.03.07(a) and (b) shall be the cubic metre of existing material demolished, determined from 70 % of the rated cubic metre capacity of the truck used to remove the material.

The tendered rates shall include full compensation for all labour, equipment and tools for removal of the damaged sections, trimming the bedding and for loading, transporting and disposing of the material from the site.

The reinstatement of damaged sections shall be paid for under the relevant items for constructing new structures.

CB.03.08 Concrete side beams .....Unit: cubic metre (m^3)

The unit of measurement shall be the cubic metre of concrete in side beams constructed as instructed.

The tendered rate shall include full compensation for furnishing all material and labour including formwork as necessary, placing concrete and shaping all surfaces and all excavations required.

CB.03.09 Overhaul on material for haul in excess of 1,0 km:

(a) Excavated material to spoil ..... Unit: cubic metre kilometer (m^3-km)

(b) Existing structures demolished ..... Unit: cubic metre kilometer (m^3-km)

The unit of measurement shall be the cubic metre of loose material hauled in excess of 1,0 km, measured according to the rated capacity of the truck used, multiplied by the average overhaul distance.

The tendered rate shall include full compensation for hauling the material in excess of the free-haul distance.

CB.04 CLEANING OF CONCRETE DRAINS AND CHANNELS

CB.04.01 Removal and dispose of material from:

(a) Drains and channels within the following invert width ranges:

(i) Less than 1,0 m ..... Unit: metre (m)

(ii) 1,0 m up to and including 2,0 m..... Unit: metre (m)

(iii) Exceeding 2,0 m up to and including 3,0 m..... Unit: metre (m)
(iv) Exceeding 3,0 m ..... Unit: metre (m)

The unit of measurement shall be the metre of channel cleaned, measured once along the invert of the channel.

The tendered rates shall include full compensation for all labour and equipment required for removing the material from channels irrespective of the depth of silt and debris and for loading, off-loading and spreading when material removed is intended for spoiling at designated spoil sites. The tendered rates shall also include full compensation for the removal of vegetation in channels and growing over the edges of channels.

The tendered rates shall also include for transporting the excavated material to spoil sites.

Where material is disposed of adjacent to the channels, the tendered rate shall include full compensation for removing the material from the channels, irrespective of the depth of silt and debris, spoiling and spreading the material adjacent to the channel where it cannot be washed back in to the channel.

CB.04.02 Overhaul of material hauled in excess of the free-haul distance of 1,0 km ..... Unit: cubic metre kilometer (m^3-km)

The unit of measurement shall be the cubic metre of material hauled to spoil, the volume to be determined from the rated capacity of the truck multiplied by the average overhaul distance. All trucks shall be fully loaded to their rated capacity.

The tendered rate shall include full compensation for hauling the material the average overhaul distance to the designated spoil site.

CB.05 CLEANING AND MAINTENANCE OF EXISTING EARTH CHANNELS

CB.05.01 Cleaning earth drains and channels ..... Unit: cubic metre (m^3)

The unit of measurement shall be the cubic metre of material cleaned out of the drain.

The tendered rate shall include full compensation for all labour and equipment required for removing the obstruction from drains, irrespective of depth of silt and debris and disposal of the excavated material as described.

CB.05.02 Repairing of earth drains and channels ..... Unit: cubic metre (m^3)

The unit of measurement shall be the cubic metre of compacted material calculated from the dimensions measured in place.

The tendered rate shall include full compensation for trimming the eroded area to firm surrounding material, for procuring, transporting placing and compacting the backfill material.

CB.05.03 Banks and dykes ..... Unit: cubic metre (m^3)

The unit of measurement shall be the cubic metre of in place in banks or dykes, calculated in accordance with authorised dimensions.

The tendered rate shall include full compensation for procuring, transporting furnishing, placing, watering, compacting, shaping and trimming of material in the banks and dykes.

CB.05.04 Cleaning of vegetation at inlet and outlet structures (5 m x 5 m) ..... Unit: square metre (m^2)

The unit of measurement shall be the area measured in square metres, cleared of all vegetation blocking the inlet and outlet structures.

The tendered rate shall include for labour, clearing of vegetation, removing to spoil of vegetation and tools to complete the work to the approval of the Engineer.

CB.05.05 Overhaul of material in excess of the free-haul distance of 1,0 km ..... Unit: cubic metre kilometre (m^3-km)

The unit of measurement shall be the cubic metre of imported material, nett volume of material compacted in place, multiplied by the average overhaul distance in excess of 1,0 km.

The tendered rate shall include full compensation for hauling the material the distance from the designated source in excess of 1,0 km.

CB 06 REPAIR AND CONSTRUCTION TO EXISTING BRICKWORK INLETS

CB.06.01 **Demolition and removal of existing structures** ..... Unit: cubic metre (m^3)

The unit of measurement shall be the cubic metre of existing material demolished. The tendered rates shall include full compensation for all labour, equipment and slabs for the removal of the section, trimming the bedding and for loading, transporting and disposing of the material from the site.

CB 06.02 **Repair of brickwork inlet structures** .....Unit: number
The unit of measurement shall be the number of inlet structures repaired.

The tendered rate shall include full compensation for furnishing all material and labour necessary for restoring the inlet structure to an as new state.

CB.06.03 **Reconstruction of brickwork inlet structures** .....Unit: number

The unit of measurement shall be the number of inlet structures completely rebuilt.

The tendered rate shall include full compensation for furnishing all material and labour necessary for rebuilding the inlet structure to a complete state.

CB.07 **LOCKABLE GRID INLETS**

CB.07.01 **Provision of lockable grid inlets** .....Unit: number

The unit of measurement shall be the number of grid inlets fitted with a steel bar suitable for locking the inlet cover down.

The tendered rate shall include full compensation for all labour, equipment and tools, rust protection and any other function necessary for the secure installation of the bar.

CB.07.02 **Provision of padlocks** .....Unit: number

The unit of measurement shall be the number of padlocks provided for lockable grid inlets.

The tendered rate shall include purchasing and installation of all padlocks, as well as providing a full set of labeled keys to the User Client.

CB 08 **CLEANING OF PIPELINES**

The cleaning of pipelines will be measured and paid for under the payment items listed under CB.02 cleaning of prefabricated culverts. Pipelines and related structures will be regarded as pre-fabricated culverts and related structures for this purpose.

CB.09 **SUBSOIL DRAINAGE**

CB.09.01 110 mm diameter uPVC perforated pipe wrapped in U14 Bidim (or similar approved) .....Unit: m

The unit of measurement for pipes shall be the metre of pipe, measured in place along its centre line, including the length of fittings. The tendered rate shall include full compensation for procuring, furnishing, laying and jointing the pipes and fittings as specified.

CB.09.02 Natural permeable material in subsoil drainage systems (coarse-grade sand) from commercial sources .....Unit: m^3

The unit of measurement shall be the cubic metre of approved sand in place in the drains, calculated in accordance with the authorized dimensions. The volume occupied by the pipes shall be deducted when calculating the volume of the permeable material. The tendered rate shall include full compensation for procuring,

furnishing, transporting from the borrow areas over a free-haul distance of 1,0 km, and placing the sand as specified.

CB.09.03 19mm coarse-graded crushed stone obtained from commercial sources .... Unit: m^3

The unit of measurement shall be the cubic metre of crushed stone in place in the drains, calculated in accordance with the authorized dimensions. The volume occupied by the pipes shall be deducted when calculating the volume of the permeable material. The tendered rate shall include full compensation for procuring, furnishing and transporting approved crushed stone from commercial suppliers, including the cost of transporting the material to the site, and placing the materials as specified. For payment purposes a distinction shall be made between the different grades of crushed stone.

CB.09.04 Synthetic-fibre filter fabric (U14 Bidim or similar approved) ..... m^2

The unit of measurement shall be the square metre of filter fabric supplied and installed as specified. The tendered rate shall include full compensation for furnishing, procuring, cutting, overlapping, jointing, placing and protecting the filter fabric as specified, as well as for wastage.

TECHNICAL SPECIFICATION

CF SEWERAGE NETWORKS

CONTENTS

CF 01 SCOPE

This specification covers all aspects regarding the general maintenance of sewerage networks which may include the following installations:

(a) Sewer pipelines and manholes
(b) Open sewerage channels

CF 02 STANDARD SPECIFICATIONS

CF 02.01 GENERAL STANDARD SPECIFICATIONS, REGULATIONS AND CODES

The latest edition, including all amendments up to date of tender, of the following specifications, publications and codes of practice shall be read in conjunction with this specification and shall be deemed to form part thereof:

SANS 1200 D - Earthworks
SANS 1200 DB - Earthworks (pipe trenches) SANS 1200 L - Medium-pressure pipelines SANS 1200 LB - Bedding (pipes)
SANS 1200 LC - Cable ducts
SANS 1200 LD - Sewers

CF 02.02 OCCUPATIONAL HEALTH AND SAFETY

The Contractor shall be required to comply with the Occupational Health and Safety Act 85 of 1993, Construction Regulations 2014 and related regulations. Non- compliance with these regulations, in any way whatsoever, will be adequate reason for suspending the Works.

CF 02.03 MANUFACTURER'S SPECIFICATIONS, CODES OF PRACTICE AND INSTALLATION INSTRUCTIONS

All equipment and materials shall be installed, serviced and repaired strictly in accordance with the manufacturer's specifications, instructions and codes of practice.

CF 02.04 MUNICIPAL REGULATIONS, LAWS AND BY-LAWS

All municipal regulations laws, by-laws and special requirements of the Local Authority shall be adhered to unless otherwise specified.

CF 03 OPERATING AND MAINTENANCE MANUALS

No operating and maintenance manuals will be developed for this section.

CF 04 EXECUTION OF REPAIR WORK

CF 04.01 GENERAL

The Contractor shall investigate and inspect all areas of the installation to confirm the extent of the repair work required and shall report to the Engineer. The Engineer will thereafter demarcate any areas to be repaired and shall instruct the Contractor with regard to the repair work to be done.

At the start of the repair and maintenance contract all the systems, installations and equipment shall be repaired as specified in the Specification. This repair work shall include but not be limited to the details specified in the Specification.

All repair work shall be executed using approved materials and equipment suitable to the systems and/or installations they serve.

All materials and equipment shall comply fully with the requirements as specified for each installation.

The said repair work shall be executed in accordance with the relevant codes of practice, standards, regulations, municipal laws and by-laws, manufacturer’s specifications and codes of practice and all Additional and Particular Specifications included in this document.

All repair work shall be executed within the approved period for repairs to be agreed at the start of the Contract period. All new equipment, materials and systems shall be furnished with a written guarantee with a defects liability period as indicated in the contract data from date of completion of repair work. These guarantees shall be furnished in favour of the University of Cape Town. On completion of the required and specified repair work the systems, installations and equipment shall be commissioned and handed over to the satisfaction of the Engineer.

CF 04.02 REPAIR OF EXISTING PIPELINES AND STRUCTURES

This section covers the work in connection with the construction of sewerage networks and associated sewerage structures such as manholes, cleaning eyes and the like. It also covers the removal and replacement of damaged and broken pipes and sewerage structures, as well as repairs to existing pipes and structures.

CF 04.02.01 General

Repair work to the soil and wastewater drainage system shall be detailed in the Particular Specification and may include the following:

(a) Replacement of damaged, broken, leaking, corroded above-ground and underground pipework and fittings;

(b) Replacement of damaged, broken and missing gully gratings, manhole covers and frames, cleaning eye covers, screws and bolts, inspection of eye covers, screws and bolts, end caps and vent cowls;

(c) Repair work to damaged manholes, gullies, cleaning eyes, etc, including builder's work and benching;

(d) Initial unblocking and cleaning of all drainage pipework, traps and gullies;

(e) Repair of sewerage system where necessary;

(f) Provision of additional connections to the sewerage system;

(g) Reinstatement and making good of walls, concrete, road surfaces, etc, to an approved acceptable level where any repair and/or service work have been executed;

(h) Video surveying of all underground drainage pipework to establish root ingress, damaged pipework, fat build-up, blockages, incorrect falls, sagging and as-built information. This survey shall be utilised to establish the extent of repair and upgrade work to be executed;

(i) Test pipe system and equipment for leakage;

(j) Sewerage pipes are to be sampled for corrosion and scaling. The Engineer will evaluate the actions to be followed if the outcome of this sampling requires attention;

(k) Reinstatement and making good of walls, tiling, floors, concrete, finishes, holes, chases, surfaces, etc, to an acceptable level where repair and/or service work have been executed.

CF 04.02.02 Construction

The Engineer will indicate the location at which sections of pipeline are in need of repair after the appropriate surveys have been completed by the Contractor.

(a) Excavation

The width of the excavation shall be sufficient to allow the proper laying, bedding and backfilling of the pipelines. The width of the excavation for each type and size of pipeline shall be as specified in SANS 1200 DB.

The depth of the excavation for each type and size of pipeline shall depend on site conditions and the amount by which the excavation is to exceed the proposed level of the invert of the pipeline and shall be sufficient to allow for the type and thickness of bedding material as instructed by the Engineer.

Where excavation is to be carried out through asphalt premix or concrete, the asphalt/concrete shall be cut neatly and vertically with approved sawing equipment before the asphalt/concrete is removed.

Excavations shall extend such that, where possible, cut in may be reduced by lifting adjacent pipes.

(b) Classification of excavation

All excavations shall be classified as follows for payment purposes:

(i) Hard material

Material which cannot be excavated except by drilling and blasting, or with the use of pneumatic tools or mechanical breakers and boulders exceeding 0,10 m³ shall be classified as hard material.

Where more than 40 % of any material (by volume) consists of boulders each exceeding 0,10 m³ in size, the material shall be classified as hard material.

(ii) Soft material

All material not classified as hard material shall be classified as soft material.

Notwithstanding the above classification, all material excavated from previously constructed fills, subgrades and subbases shall be classified as soft material.

(c) Disposal of excavated material

Where excavated material does not comply with the requirements for backfilling material as specified or is surplus to backfilling requirements, such excavated material shall be removed from the site.

Material suitable for use in the works, however, shall be used as prescribed.

(d) Removal of damaged pipelines

Where indicated by the Engineer damaged sections of pipelines shall be completely removed and replaced.

Excavation shall be carried out as described for new pipeline installation and the excavated material shall be, if suitable, preserved for backfilling. The damaged pipe materials shall be disposed of where instructed by the Engineer.

(e) Pipe couplings

Repair sections shall be joined utilising existing pipe sockets and collars where possible.

Repair couplings shall be used with the approval of the Engineer.

(f) Laying of vitrified clay pipes and fittings

New sections of vitrified clay pipes shall be laid on granular bed as directed by the Engineer. The inside of the pipes shall be smooth and without any displacement and all pipes shall be laid true to line and level with a minimum slope of 2 % or as directed by the Engineer.

(g) Rock foundation

Where rock, shale or hard material is encountered on the bottom of excavations a bed of fine material as required for class B bedding shall be placed before laying the pipe.

(h) Concrete encasement

Where instructed by the Engineer pipes shall be encased in concrete. All such encasing shall be done in accordance with the Engineer's instructions and sufficient allowance shall be made for movement joints.

(i) Extension of existing pipelines

Where existing pipelines require extension or where damaged sections are replaced the new sections shall be placed at the same grade and, where they join the existing service, at the same level as the existing pipeline.

Existing chambers or other structures which may obstruct any new work shall be demolished and removed. The demolition and reconstruction of new structures shall be paid for under the relevant sections in the specification.

(j) Construction in existing roads

Road crossings will either be constructed utilising sufficient provision of bypass roads, or they will be done utilising the half width of the road. At all times a through route shall be maintained for all traffic.

(k) Repairing of leaks

Where leaks occur at pipe sockets or collars the effected section will be cut from the pipeline and repaired using repair couplings.

Where obvious leaks occur due to displaced sealing rubbers they will be replaced if the replacement can be done economically by lifting adjacent pipes.

(l) Sewer manholes

All manhole cover frames shall be cast into the concrete cover slabs.

Manholes in trafficable areas shall be provided with heavy duty covers and frames and surrounded by concrete slabs.

(m) Steep sewers

Sewer pipes in the ground with a slope steeper than 1:5 and under surface beds shall be encased in concrete.

(n) External sewers

The sewer outside the boundary of the building complex shall be constructed strictly in accordance with the details and specifications of the Local Authority.

(o) As-built services

Existing drainage invert levels and positions are to be checked against invert levels given on the drawings before work commences. The Engineer must be informed immediately of any discrepancy.

The Contractor shall be responsible for the compilation of as-built plans of sewerage network, showing all pipes, pipe diameters, invert levels and associated structures.

All existing services are to be located and opened before the proposed work commences.

(p) Testing

The drainage system shall be tested according to the specifications laid down by the NBRI. This test shall be carried out in the presence and to the satisfaction and approval of the Engineer.

(q) Ingress of foreign material

During construction all pipe ends are to be suitably plugged to prevent any ingress of dirt, rubble, etc.

(r) CCTV surveys

Modern technology video surveying equipment and detection equipment shall be utilised to establish blockage problems and positions of such problems.

(s) Proximity to buildings

Any drainage pipe within the 45° range below building foundations shall be encased in concrete or soilcrete as specified.

(t) Repair to existing structures

Damaged existing structures shall be demolished to the extent directed by the Engineer on site and the resulting debris shall be spoiled at designated sites.

The reinstatement of damaged sections shall be carried out to the same standards prescribed for new construction and shall be paid for under the relevant items scheduled for new structures.

Provision shall be made for the reinstatement of existing damaged prefabricated concrete half round channels.

(u) Repair to existing channels

Existing channels shall be cleaned. Broken sections of lined channels shall be repaired. Such repair work shall comprise patching of concrete and replacement of precast sections.

CF 04.02.03 Quality standard

Pipelines shall be laid at even gradients to the satisfaction of the Engineer and the applicable specifications.

CF 04.02.04 Materials

Materials and equipment to be used for repair items shall be suitable and/or adaptable to the existing installation and shall comply with the following:

(a) Manhole covers

Manhole covers, etc, shall have covers and frames complying with SANS 558.

(b) Vitrified clay pipe and fittings

Vitrified clay pipe shall only be used for underground installations. The pipes and fitting shall strictly conform to SANS 559. The pipes and fittings shall have a minimum crushing strength of 45 kN/m.

The joining method to be used shall be polypropylene couplings with integral rubber seal similar or equal to Vitrosleeve in accordance with SANS EN 295: Vitrified clay pipes and fittings and pipe joints for drains and sewers, allowing up to 2,5° angular movement per joint and 5 mm line displacement per joint. The joint shall retain an affective water seal with respect to above conditions with a 6 m water head.

Pipes shall be cut using an approved pipe cutter and the end shall then be trimmed by means of a pipe trimmer to remove any sharp edges.

All fittings underground shall consist of vitrified clay and shall comply with SANS 559.

The piping system shall be tested according to the NBRI information sheet X/BOU 2-34.

CF 04.02.05 Air test for sewer and drains

The following air test as specified in the NBRI information sheet X/BOU 2-34 shall be applicable to all air tests on new sewers and drains installed under the repair Contract, and shall be executed by the Contractor and witnessed by the Engineer.

(a) Method of air testing

All openings in the pipeline are plugged by means of sewer testing plugs. The sewer plug at the lowest end of the pipeline is connected to an air supply hose, which is attached to a mechanically driven air blower, compressor or hand pump. Air is pumped into the pipeline at a pressure of approximately 375 mm water gauge. The pressure is held at this level for a period of two minutes to allow the air temperature to become constant. Subsequently the air supply is closed off and the time recorded for the air pressure to drop from 250 to 125 mm water gauge. If the recorded time is less than the value given in the table below, it means that the pipeline is leaking and does not comply with the required standards of tightness. The apparatus required for the air test is commercially available.

The following requirements have to be taken into account when performing the air test:

(i) Air-permeable pipelines such as vitrified clay or asbestos cement should preferably be tested when moist or wet.

(ii) The trench shall be partially backfilled before the test is carried out. This is required to stop possible temperature variations and to prevent damage to the pipeline during subsequent backfilling operations.

(iii) The testing equipment shall be shielded from the direct rays of the sun.

(iv) Flexible joints are recommended for sewer and drain pipelines. Good quality flexible joints are superior to cement caulked joints and they also provide the pipeline with flexibility to prevent cracking due to subsequent soil movement.

(v) The test method is very sensitive to flaws in the pipeline, such as cracks or leaking joints. The actual positions of flaws along the pipeline can be determined by using the specialised equipment.

(vi) If the pipeline is below the water table and subjected to external water pressure, the test method should be modified by the Engineer to ensure that the final pressure value is higher than that of the external water pressure acting on the lowest part of the installation.

The minimum times for pressure drop of 250 mm to 125 mm water gauge are given in table CF 04.02.05/1 below.

TABLE CF 04.02.05/1

PIPE DIAMETER (mm)	MINIMUM TIME (min - s)	CRITICAL LENGTH OF PIPELINE (m) (58 m^2 internal surface area)	MINIMUM TIME(s) FOR LONGER LENGTH (L) OF PIPELINE
100	1 to 58	184,6	0,640 L
150	2 to 57	123,1	1,439 L
200	3 to 56	92,3	2,559 L
225	4 to 26	82,1	3,239 L
250	4 to 55	73,8	3,998 L
300	5 to 54	61,5	5,757 L
375	7 to 23	49,2	8,996 L
450	8 to 51	41,0	12,954 L
525	10 to 20	35,2	17,632 L
600	11 to 49	30,8	23,030 L

CF 04.03 CLEANING OF SEWERAGE NETWORK

The work involved under this section is the removal of silt, debris and vegetation from within the pipelines and manholes and the general cleaning of areas where leakage has occurred. This can be done either mechanically or chemically according to the more appropriate method as specified by the Engineer.

CF 04.03.01 Construction

The Contractor shall arrange with the Engineer for an inspection of the pipe route before the cleaning of any pipeline sections is carried out. Based on the inspection, the Engineer will instruct the Contractor as to which sections of the network require cleaning.

Visual inspections utilising closed-circuit TV cameras will not be required unless deemed essential and will be specifically requested by the Engineer.

Sections of the pipeline may be removed for a more detailed inspection. Such sections shall be repaired as specified in Subclause CF 04.02.02. Sections shall only be cut from the pipeline where specifically instructed by the Engineer.

The method to be applied for the cleaning of the pipelines shall be chemical or mechanical. The method to be used for each section of the pipeline will be instructed by the Engineer.

Material removed from the pipes shall be disposed of as instructed by the Engineer.

Where insufficient scour values are present, the method for scouring of the pipelines shall be discussed and agreed with the Engineer prior to implementation.

CF 04.04 REPAIR OF FITTINGS

CF 04.04.01 Construction

The Engineer will indicate the fittings that are to be repaired, but these fittings shall not be limited to those specifically indicated by the Engineer.

Repair of the following fittings may be required:

(a) Cleaning eyes

(b) Permanent plug stoppers

(c) Channel sections.

CF 05 TESTS AND INSPECTIONS ON COMPLETION OF REPAIR WORK

Except where otherwise provided in the Contract, the Contractor shall provide all labour, materials, power, fuel, accessories and properly calibrated and certified instruments necessary for carrying out such tests. The Contractor shall make arrangements for such tests and he shall give at least 72 hours notice to the Engineer, in writing, prior to commencement of the test.

In the event of the plant or installation not passing the test, the Employer shall be at liberty to deduct from the Contract price all reasonable expenses incurred by the Employer or the Engineer attending the repeated test.

Whenever any installation or equipment is operated for testing or adjusting as provided for above, the Contractor shall operate the entire system for as long a period as may be required to prove satisfactory performance at all times in the occupied space served by that system for up to twenty-four hours a day continuously until the system is handed over.

The Contractor shall provide all labour and supervision required for such operation and the Employer may assign operating personnel as observers, but such observation time shall not be counted as instruction time.

After complete installation of the system all equipment shall be tested, adjusted and readjusted until it operates to the satisfaction and approval of the Engineer.

The Contractor shall submit certificates of tests carried out to prove the quality and proper functioning of all equipment and also certificates to be obtained from all relevant authorities and statutory bodies, etc.

CF 06 QUALITY ASSURANCE SYSTEM

The Contractor shall institute an approved quality assurance (QA) system which shall be submitted to the Employer or Engineer for approval. The records of this QA system shall be kept throughout the duration of the Contract and submitted to the Engineer at regular intervals as required.

CF 07 MAINTENANCE TO INSTALLATION SYSTEMS AND EQUIPMENT

CF 07.01 GENERAL

Maintenance does not form parr of this contract.

CF 08 MEASUREMENT AND PAYMENT

CF.01 SEWERAGE NETWORKS

CF.01.01 Repair of existing pipelines..... Unit: metre (m)

The unit of measurement shall be per metre length of pipe replaced. In each case the Contractor shall agree on the length of pipe to be replaced and the method of coupling the pipes.

The tendered rate shall include full compensation for cleaning and grubbing, excavation, removal of existing pipeline, dealing with water logged conditions, provision of bedding and additional backfill, bedding and back filling of replacement pipeline, cutting to length, finishing, repair of kerbs, road surfaces, accommodation of traffic, excavation in all materials, removal of unsuitable material from the trench and disposal of surplus materials.

The tendered rate shall include full compensation for all material, plant and labour required to temporarily by-pass (if required) the pipe section being replaced.

The provision of the materials will be measured separately under CF. 01.02.

CF.01.02 Provision of materials

(a) Pipelines..... Unit: metre (m)

The unit of measurement shall be the metre of pipe replaced.

(b) Fittings.....Unit: number

The unit of measurement shall be the number of fittings installed.

The tendered rates shall include full compensation for all transport to the place of installation, storage, labour costs.

Separate pay items shall be listed for the pipe materials and fittings per diameter and class and for the class of bedding to be used.

CF.01.03 Replacement of manhole covers, grid inlets and the like

(a) SANS 558 Type 4 - covers, grids, etc, only:

(i) Maximum dimension up to 300 mm.....Unit: number
(ii) Maximum dimension 301 mm - 600 mm.....Unit: number
(iii) Maximum dimension 601 mm - 900 mm.....Unit: number
(iv) Maximum dimension over 900 mm.....Unit: number

(b) SANS 558 Type 4 - frames only for covers, grids, etc:

(i) Maximum dimension up to 300 mm.....Unit: number
(ii) Maximum dimension 301 mm - 600 mm.....Unit: number
(iii) Maximum dimension 601 mm - 900 mm.....Unit: number
(iv) Maximum dimension over 900 mm.....Unit: number

(c) All covers, grids, etc, only:

(i) Maximum dimension up to 300 mm.....Unit: number
(ii) Maximum dimension 301 mm - 600 mm.....Unit: number
(iii) Maximum dimension 601 mm - 900 mm.....Unit: number

(iv) Maximum dimension over 900 mm.....Unit: number

(d) All frames only for covers, grids, etc:

(i) Maximum dimension up to 300 mm.....Unit: number
(ii) Maximum dimension 301 mm - 600 mm.....Unit: number
(iii) Maximum dimension 601 mm - 900 mm.....Unit: number
(iv) Maximum dimension over 900 mm.....Unit: number

The unit of measurement shall be the number of covers or frames installed. The classification of the size of each cover or frame will be based on the nominal dimensions of the cover/unit and not on the actual dimensions.

The tendered rates shall include full compensation for procuring, furnishing and placing the new covers, grids and/or frames. The tendered rates shall also include full compensation for removing and disposing of the damaged covers, grids and/or frames from the site.

CF.01.04 Manholes and inspection chambers

CF.01.04.01 Raising or lowering of existing manholes or inspection chambers of all types:

(a) Raise/lower 0 m up to and including 0,5 m.....Unit: number
(b) Raise/lower exceeding 0,5 m up to and including 1 m .....Unit: number

The unit of measurement shall be the number of manholes/inspection chambers raised/lowered within the specified dimensions.

The tendered rates shall include full compensation for all excavation (including around structures), levelling, temporary timbering, shoring and strutting, for preparing the bottom of the excavation for the manhole beds, the disposal of material, dealing with subsurface or surface water, benching and for other operations necessary for completing the work as specified.

Payment shall distinguish between soft and hard material. The tendered rates shall include full compensation for transporting the excavated material from the site.

CF.01.04.02 Breaking into existing sewer and building a new manhole

(a) Pre-cast concrete manhole:

(1) Depth exceeding 0,5 m up to and including 1,0 m .....Unit: number

(2) Depth exceeding 1,0 m up to and including 1,5 m .....Unit: number

(3) Depth exceeding 1,5 m up to 2,0 m Unit: number

The unit of measurement shall be the number of manholes constructed within the specified dimensions.

The tendered rate shall include full compensation for excavation, building a new manhole over the sewer, breaking into the existing sewer, building the channelization under wet conditions, ensuring the water tightness of the new connection, supplying all the necessary materials, removing surplus material, all labour and equipment required to make the connection, and liaison with the local authorities. Provision for manhole covers shall be made under CF 01.03 payment.

CF.01.04.03 Connecting to existing sewer ..... Unit: sum

The tendered sum shall include full compensation for excavation, making an opening in the existing manhole, installing new pipes in the new opening, for breaking out and modifying the channelization inside the manhole to suit the new pipe layout, ensuring the water tightness of the new connection, supplying all the necessary materials, removing surplus material and debris all labour and equipment required to make the connection, and liaison with the local authorities.

CF.01.04.04 Repair of channels ..... Unit: metre (m)

The unit of measurement shall be the length of channel section repaired.

The tendered rate shall include full compensation for cleaning, patching, repairing of existing channels, irrespective of diameter and position. The rate shall also include all necessary materials, equipment and labour required.

CF.02 CLEANING OF SEWERAGE NETWORK

CF.02.01 Mechanical cleaning of sewer pipes and structures:

(a) Up to 150 mm .....Unit: metre
(b) 151 mm to 300 mm .....Unit: metre
(c) 301 mm to 450 mm .....Unit: metre
(d) More than 450 mm .....Unit: metre

The unit of measurement shall be the metre of pipe cleaned, measured once along the soffit of the culvert. For multiple pipes each individual pipe shall be measured separately.

The tendered rates shall include full compensation for removing the material, for disposing of the material in an approved manner and ensuring that the material will not wash into drainage trenches.

CF.02.02 Chemical cleaning of sewer pipes and structures:

(a) Up to and including 150 mm .....Unit: metre
(b) 151 mm to 300 mm .....Unit: metre
(c) 301 mm to 450 mm .....Unit: metre
(d) More than 450 mm .....Unit: metre

The unit of measurement shall be the metre of pipe cleaned, measured once along the soffit of the culvert. For multiple pipes each individual pipe shall be measured separately.

The tendered rates shall include full compensation for supply of chemical agents, equipment, labour and the effective application of the cleaning process.

CF.02.03 Provision of equipment for visual inspection of underground pipe networks ..... Unit: lump sum

The tendered sum shall include full compensation for the provision of suitable equipment, such as TV surveillance equipment, torches, lights and mirrors, etc, to enable a thorough visual inspection of the pipe network.

CF.02.04 Use of CCTV surveillance equipment ..... Unit: metre (m)

The unit of measurement shall be the metre of pipe inspected.

The rate shall be fully inclusive of all associated equipment and interpipe moves and recording equipment.

CF.02.05 **Visual inspection of underground pipe network** .....Unit: sum

The tendered sum shall include full compensation for all processes necessary to complete a thorough check of the sewer network including lifting and replacing manhole covers, using relevant equipment and any clearing necessary to allow the visual inspection to proceed.

CF.02.06 **Demolition and removal of damaged existing structures:**

(a) Plain concrete ..... Unit: cubic metre (m^3)

(b) Reinforced concrete ..... Unit: cubic metre (m^3)

(c) Kerbing and channelling ..... Unit: metre (m)

(d) Pipework ..... Unit: metre (m)

The unit of measurement for CF.02.06(a) and (b) shall be the cubic metre of existing material demolished, determined from 70 % of the rates cubic metre capacity of the truck used to remove the material.

The unit of measurement for CF.02.06(c) and (d) shall be the metre length of kerbing and channelling or pipework removed.

The tendered rates shall include full compensation for all labour, equipment and tools for removal of the damaged sections, trimming the bedding and for loading, transporting and disposing of the material.

The reinstatement of damaged sections shall be paid for under the relevant items for constructing new structures.

CF.03 **TESTS AND INSPECTIONS**

(a) Pressure testing of pipelines ..... Unit: metre

The unit of measurement shall be the length of sewer pipeline tested.

(b) Testing of manholes ..... Unit: number

The unit of measurement shall be the number of manholes tested after repair.

The tendered rates shall include full compensation for all labour, materials, power, fuel, accessories and properly calibrated and certified instruments necessary for carrying out relevant tests as per SANS 1200. Submission of certificates from tests and equipment and any costs involved in obtaining such from relevant authorities shall also be included in the tendered sum.

ANNEXURE B: DRAWINGS

DRAWING TITLE	DRAWING NUMBER
SITE PLAN LAYOUT	0546-01
ROOF A TRUSS AND BRACING LAYOUT	0546-02
EAVES CONNECTION DETAILS	0546-03
ROOF A HVAC PLAN LAYOUT	0546-04
HARRY MOLTENO LIBRARY DETAILS	0546-05
ROOF A EAVES CONNECTION DETAIL	0546-06
WATER SUPPLY & TOILETS (CBC BUILDING)	0546-07
FIRE PROTECTION (CBC BUILDING)	0546-08

No.	DATE	AMENDMENT	INIT
T0	AUG 25	ISSUED FOR TENDER	R.I

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name: N/A

date: N/A

professional registration no.: N/A

cad file name: 0546-01

page type: A1

client

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PRIVATE BAG X12
MENLOPARK
0102

discipline: STRUCTURAL

service: SANBI KIRSTENBOSCH: THE REPAIRS TO THE EXISTING TIMBER ROOF TRUSSES AND WET SERVICES AT THE KIRSTENBOSCH CENTRE FOR BIODIVERSITY CONSERVATION BUILDING INCLUDING ASSOCIATED CIVIL AND BUILDING WORKS AT THE HARRY MOLTENO LIBRARY WITHIN KIRSTENBOSCH NATIONAL BOTANICAL GARDENS

project number: 0546

drawing title: SANBI KIRSTENBOSCH: SITE PLAN

ref.no. --

scale 1:250

date AUG 25

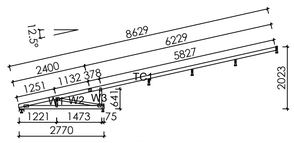
designed R ISHMAIL

drawn K JURIES

checked R ISHMAIL

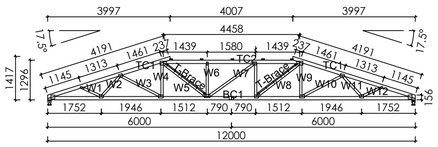
drawing number: 0546-01

revision: T0



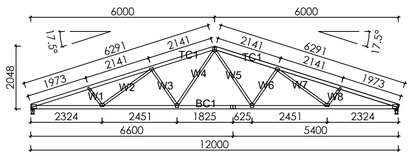
4No. HD1_2PLY TRUSS FRAMES
TC RESTRAINTS CENTRES - 600mm

HD1_2PLY TRUSS FRAME MEMBERS:
TOP CHORD TC1 - 38x114 SAP05
BOTTOM CHORD_BC1 - 38x114 SAP05
WEBS_W1 - W3 - 38x76 SAP05



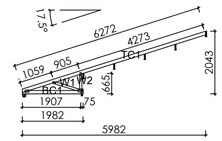
2No. HG3_2PLY TRUSS FRAME
TC RESTRAINT CENTRES - 600mm

TOP CHORD_TC1 & TC2 - 38x114 SAP07
BOTTOM CHORD_BC1 - 38x114SAP05
WEBS_W1 - W12 - 38x76 SAP05



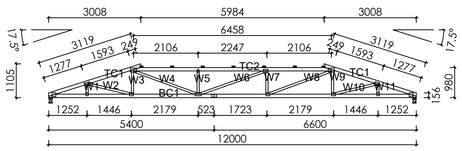
G2_2PLY TRUSS FRAME
TC RESTRAINT CENTRES - 600mm

TOP CHORD_TC1 - 38x114 SAP05
BOTTOM CHORD_BC1 - 38x114 SAP07
WEBS_W1 - W9 - 38x76 SAP05



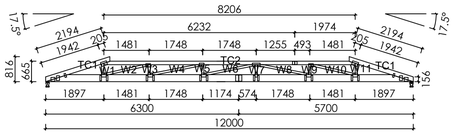
J1 TRUSS FRAME:
TC RESTRAINT CENTES - 600mm

TOP CHORD_TC1 - 38x114 SAP05
BOTTOM CHORD_BC1 - 38x114 SAP05
WEBS_W1 - W2 - 38x76 SAP05



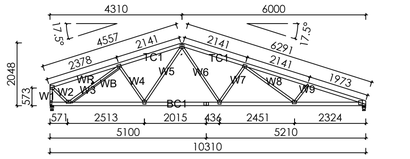
1No. HG2_2PLY FRAMES TC RESTRAINT
CENTRES - 600mm

TOP CHORD_TC1 & TC2 - 38x114 SAP07
BOTTOM CHORD_BC - 38x114 SAP07
WEBS_W1 - W11 - 38x76 SAP05



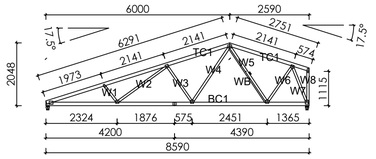
2No. HG2_3PLY TRUSS FRAMES TC
RESTRAINT CENTRES - 600mm

TOP CHORD_TC1_38x114 SAP07 & TC2 -
38x114 SAP07
BOTTOM CHORD_BC1 - 38x225 SAP07
WEBS_W1 - W7 - 38x76 SAP05



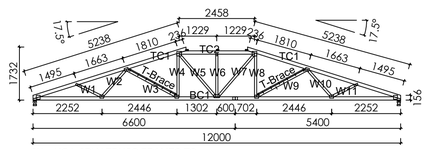
T2 TRUSS FRAME
TC RESTRAINT CENTRES - 600mm

TOP CHORD_TC1 - 38x114 SAP05
BOTTOM CHORD_BC1 - 38x114 SAP05
WEBS_W1 - W9 - 38x76 SAP05



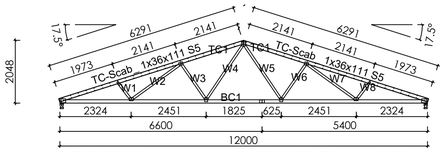
T3 TRUSS FRAME
TC RESTRAINT CENTRES - 600mm

TOP CHORD_TC1 - 38x114 SAP05
BOTTOM CHORD_BC1 - 38x114 SAP05
WEBS_W1 - W8 - 38x76 SAP05



2No. HG4_2PLY TRUSS FRAMES TC
RESTRAINT CENTRES - 600mm

TOP CHORD_TC1 & TC2_38x114 SAP05
BOTTOM CHORD_BC1 - 38x114 SAP05
WEBS_W1 - W11 - 38x76 SAP05



T1 TRUSS FRAME:
TC SCAB - 38x114 SAP07 &
TC RESTRAINT CENTRES - 600mm

TOP CHORD_TC1 - 38x114 SAP05
TOP CHORD SCAB_38x114 SAP05
BOTTOM CHORD_BC1 - 38x114 SAP07
WEBS_W1 - W8 - 38x76 SAP05

EAVES RAFTERS MARKED - R6 (SPAN 3250mm WITH 3 SUPPORTS):

- REQUIRES AN ADDITIONAL DOUBLE SCAB 152x38 (7)
- FIXING OF THE RAFTER TO STEEL EAVES CHANNEL BEAM, AS PER DETAIL RC003.

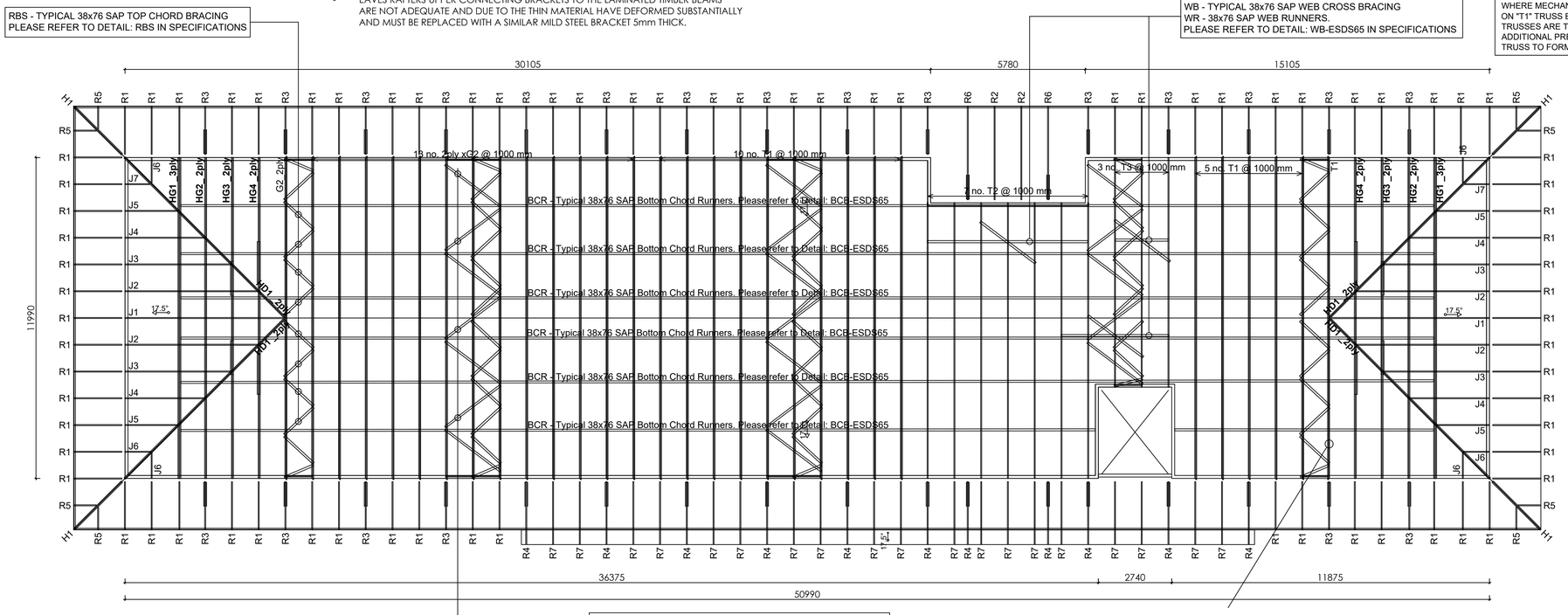
EAVES RAFTER SUPPORT STRUTS:

- EAVES RAFTERS UPPER CONNECTING BRACKETS TO THE LAMINATED TIMBER BEAMS ARE NOT ADEQUATE AND DUE TO THE THIN MATERIAL HAVE DEFORMED SUBSTANTIALLY AND MUST BE REPLACED WITH A SIMILAR MILD STEEL BRACKET 5mm THICK.

RBS - TYPICAL 38x76 SAP TOP CHORD BRACING
PLEASE REFER TO DETAIL: RBS IN SPECIFICATIONS

WB - TYPICAL 38x76 SAP WEB CROSS BRACING
WR - 38x76 SAP WEB RUNNERS.
PLEASE REFER TO DETAIL: WB-ESDS65 IN SPECIFICATIONS

NOTE:
WHERE MECHANICAL DUCTING IS RESTING ON "T1" TRUSS BOTTOM CHORDS, "T1" TRUSSES ARE TO BE SCABBED WITH AN ADDITIONAL PREFABRICATED REPLICA TRUSS TO FORM A MULTI-PLY SYSTEM.



BCB - TYPICAL 38x76 SAP BOTTOM CHORD BRACING.
PLEASE REFER TO DETAIL: BCB-ESDS65 IN SPECIFICATIONS

GENERAL NOTE:

- ROOF LAYOUT TO BE READ IN CONJUNCTION WITH TRUSS FRAME LAYOUT AND VIRTUAL ENG. REPORT
- ALL TIE_DOWNS TO BE CHECKED AND NEW TIE_DOWNS TO BE INSTALLED WHERE REQUIRED. REFER TO DETAIL: HDALT FOR FIXING METHODOLOGIES.
- G1 & T1 TRUSS FRAMES TC SCAB_REFER TO DETAIL: ADD FIXING OF SCAB MEMBER SELF DRILLING SCREWS "ESDS65" OR SIMILAR APPROVED.
- HD1_2PLY, HG1_3PLY, HG2-HG4_2PLY TRUSS FRAMES MUST BE REPLACED WITH NEW PREFABRICATED TRUSS FRAMES.
- ALL BRACKETS TO BE CHECKED ON SITE AND MUST BE FILLY NAILED OR BOLTED WHERE REQUIRED.

TYPICAL ROOF PLAN, TRUSS FRAME AND BRACING LAYOUT
SANBI_BLOCK A

LAMINATED TIMBER BEAMS FIXED TO TRUSS/GIRDERS HEEL ENDS:

- THE MILD STEEL BRACKETS FIXING THE LAMINATED BEAMS TO HEEL ENDS OF THE TRUSSES ARE BRACKETS FIXED WITH M12 BOLTS AND WASHERS.
  NB: ALL THE COACH BOLTS MUST BE REPLACED WITH NEW M12 BOLTS AND STRUCTURAL WASHERS.
- ALL TIE-DOWNS TO BE CHECKED AND NEW TIE-DOWNS TO BE INSTALLED WHERE REQUIRED REFER TO DETAIL: HDALT FOR FIXING METHODOLOGIES.

NB: SOLAR PANELS CAN ONLY BE FITTED ON T1, T2 AND T3 TRUSS FRAMES.

TRUSS MARKED G1 (SOUTH END OF ROOF SECTION ONLY)

- WEB HAS BEEN REMOVED TO ACCOMODATE FOR TWO LARGE HEAVY AIRCON UNITS.
- A NEW REPLICA TRUSS MUST BE INSTALLED NEXT TO THE TRUSS AND BOLTED WITH M12 BOLTS AND STRUCTURAL WASHERS AND FULLY NAILED. **(SEE 2PLY DETAIL)**

EAVES RAFTERS MARKED - R7 (SPAN 3250mm AND SUPPORTED BOTH ENDS

- REQUIRES AN ADDITIONAL SINGLE SCAB 152x38 (5)
- FIXING OF THE RAFTER TO STEEL EAVES CHANNEL BEAM, AS PER DETAIL RC003

EAVES RAFTER SUPPORT STRUTS

- EAVES RAFTER UPPER CONNECTING BRACKETS TO LAMINATED TIMBER BEAMS ARE NOT ADEQUATE AND DUE TO THE THIN MATERIAL HAVE DEFORMED SUBSTANTIALLY AND MUST BE REPLACED WITH A SIMILAR MILD STEEL BRACKET 5mm THICK.

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NOTE:
DRAWING ONLY ISSUED FOR INFORMATION AND TENDER PURPOSES. CONTRACTOR TO VERIFY ALL DIMENSIONS ON SITE DURING CONSTRUCTION BEFORE REDESIGNING AND CONSTRUCTING NEW ROOF.

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date: N/A

professional registration no.: N/A

cad file name: 0546-02

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discipline: STRUCTURAL

service:
SANBI KIRSTENBOSCH:
THE REPAIRS TO THE EXISTING TIMBER ROOF TRUSSES AND WET SERVICES AT THE KIRSTENBOSCH CENTRE FOR BIODIVERSITY CONSERVATION BUILDING INCLUDING ASSOCIATED CIVIL AND BUILDING WORKS AT THE HARRY MOLTENO LIBRARY WITHIN KIRSTENBOSCH NATIONAL BOTANICAL GARDENS

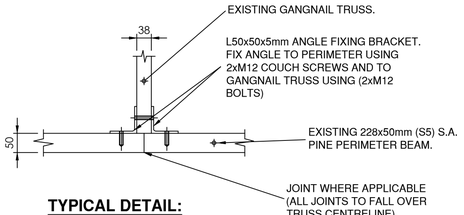
project number: 0546

drawing title:
ROOF A TRUSS
&
BRACING LAYOUT

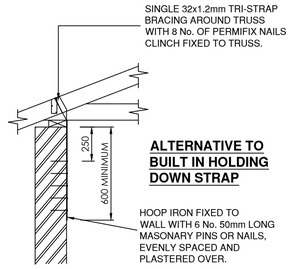
ref.no. --
designed K. JURIES
scale 1:100
drawn T.ISMAIL
date AUG 25
checked R.ISHMAIL

drawing number: 0546-02

revision: T0

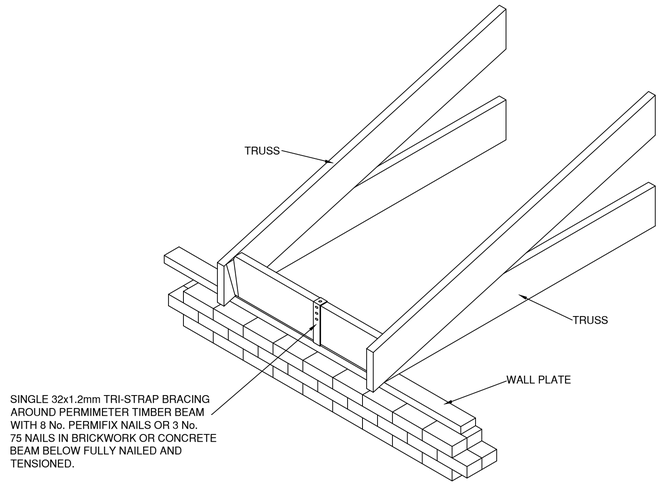


TYPICAL DETAIL: PERIMETER BEAM/TRUSS CONNECTION

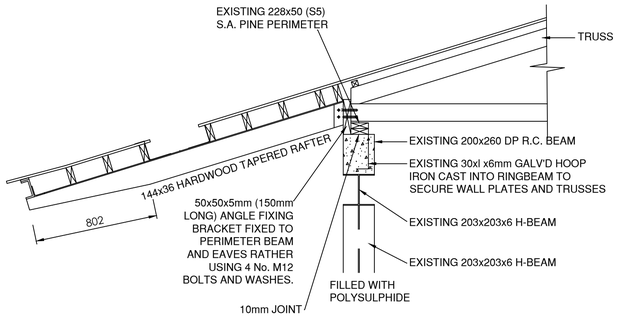


ALTERNATIVE TO BUILT IN HOLDING DOWN STRAP

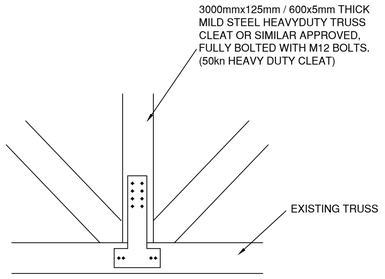
DETAIL: HOLDALT



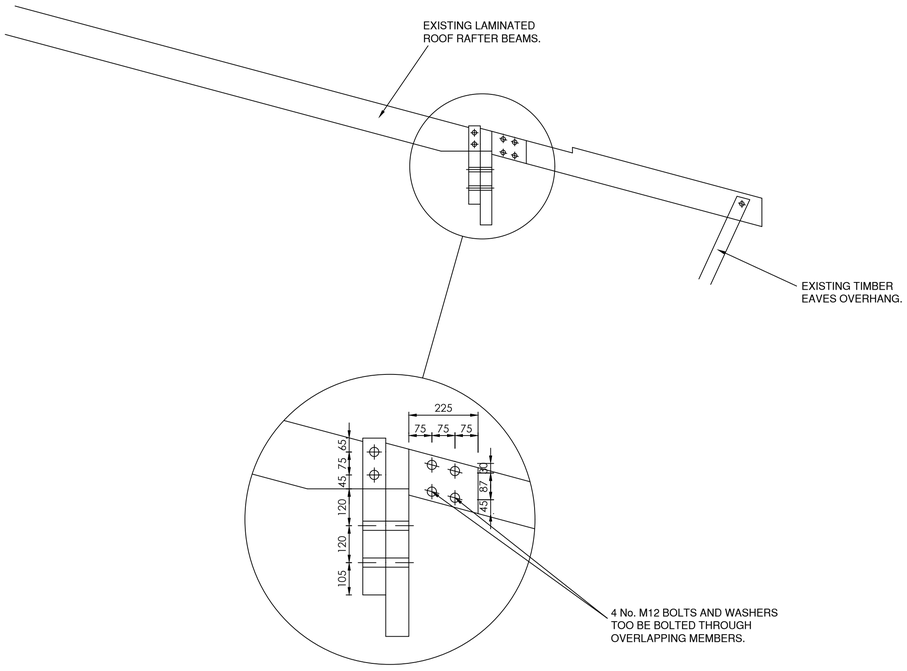
DETAIL: HD



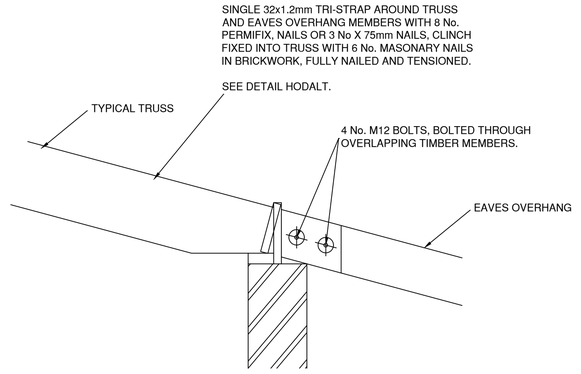
EAVES OVERHANG TO LAMINATED BEAM CONNECTED DETAIL



HEAVY DUTY BRACKET DETAIL



EAVES OVERHANG OF RAFTER BEAM DETAIL



TYPICAL EAVES CONNECTION DETAIL

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project number: 0546

drawing title: SANBI KIRSTENBOSCH: EAVES CONNECTION DETAIL

ref.no. --

designed R ISHMAIL

scale N.T.S

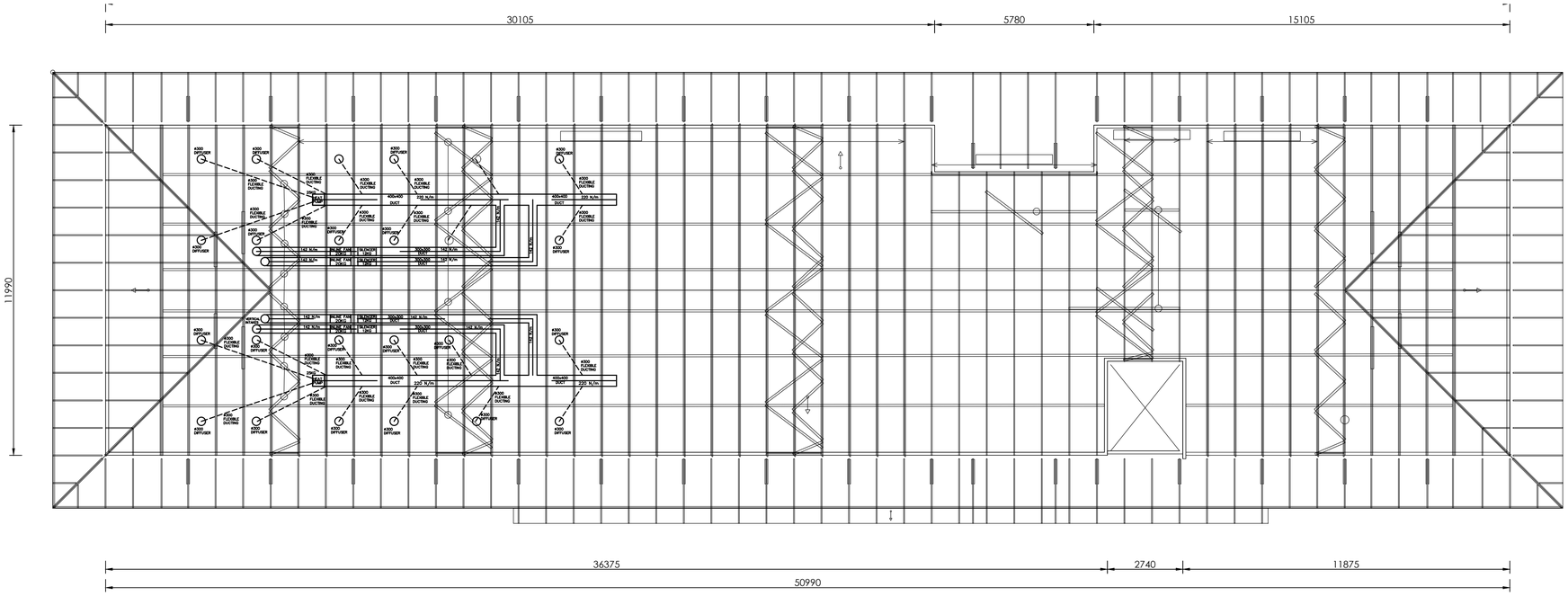
drawn T.ISMAIL

date AUG 25

checked R ISHMAIL

drawing number: 0546-03

revision: T0



Roof A HVAC Plan Layout

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project number: 0546

drawing title: SANBI KIRSTENBOSCH: ROOF TRUSS A HVAC PLAN LAYOUT

ref.no. --

scale 1:100

date AUG 25

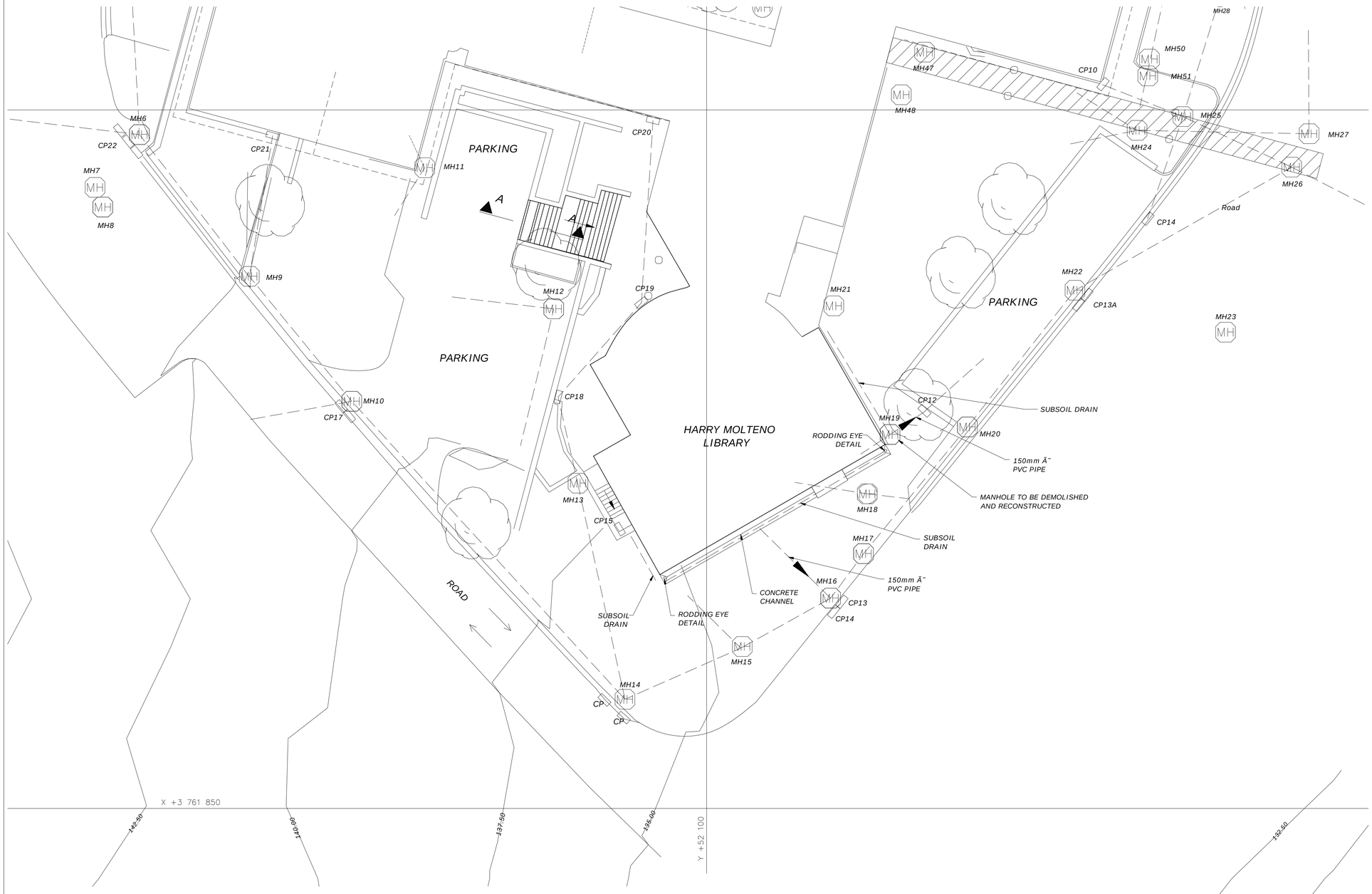
designed R. ISHMAIL

drawn T.ISMAIL

checked R.ISHMAIL

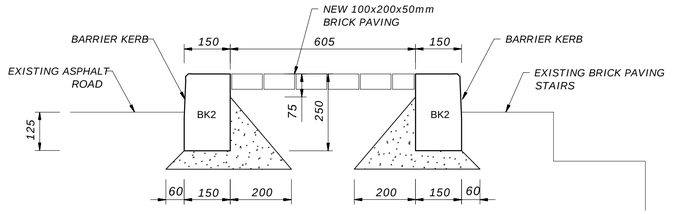
drawing number: 0546-04

revision: T0



LIBRARY PLAN
1:150

NOTE :
1) WINDOWS ALONG PERIMETER TO BE SEALED.
2) ALL GUTTERS TO BE CLEANED.
3) EXISTING MANHOLE TO BE DEMOLISHED AND RECONSTRUCTED.
4) LEAK DETECTION TESTS TO BE CARRIED OUT.
5) CONCRETE KERBING AND PAVING TO BE INSTALLED.
6) WEEPHOLES TO BE INSTALLED ALONG BUILDING PERIMETER.



SECTION A-A
1:10

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Date: _____

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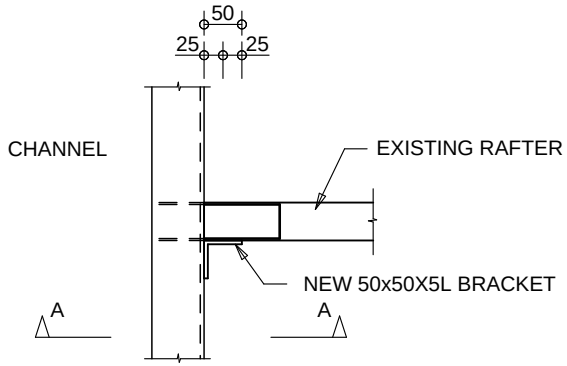
project number: 0546

drawing title: PROPOSED STRUCTURAL REPAIRS HARRY MOLTENO LIBRARY BUILDING

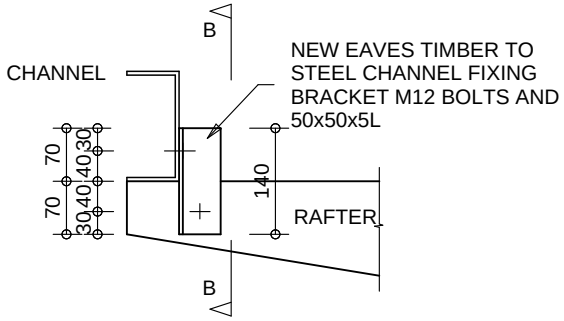
ref.no. --	designed E ARENDSE
scale AS SHOWN	drawn B CONRADIE
date AUG 25	checked E ARENDSE

drawing number: 0546-05
revision: T0



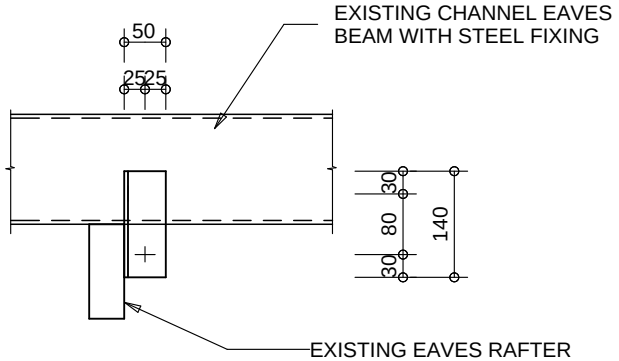
PLAN OF TYPICAL EAVES BRACKET

N.T.S



ELEVATION A-A

N.T.S



ELEVATION B-B

N.T.S

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Checked by:

Date:

Approved by:

Date:

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date: N/A

professional registration no.: N/A

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page type: A4

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POSTNET SUITE 047
PRIVATE BAG X12
MENLOPARK
0102

discipline: STRUCTURAL

service

SANBI KIRSTENBOSCH:
THE REPAIRS TO THE EXISTING TIMBER ROOF TRUSSES AND WET SERVICES AT THE KIRSTENBOSCH CENTRE FOR BIODIVERSITY CONSERVATION BUILDING INCLUDING ASSOCIATED CIVIL AND BUILDING WORKS AT THE HARRY MOLTENO LIBRARY WITHIN KIRSTENBOSCH NATIONAL BOTANICAL GARDENS

project number: 0546

drawing title

ROOF A: EAVES CONNECTION DETAIL

ref.no. --

designed: R.ISHMAIL

scale: NTS

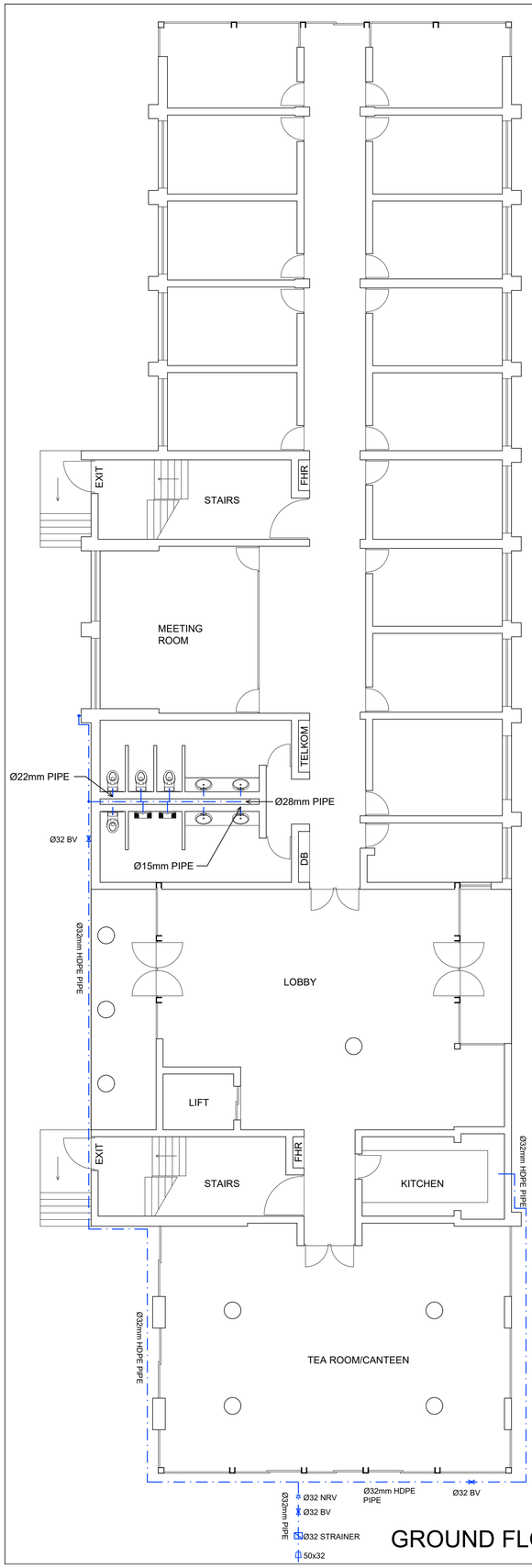
drawn: K.JURIES

date: AUG 25

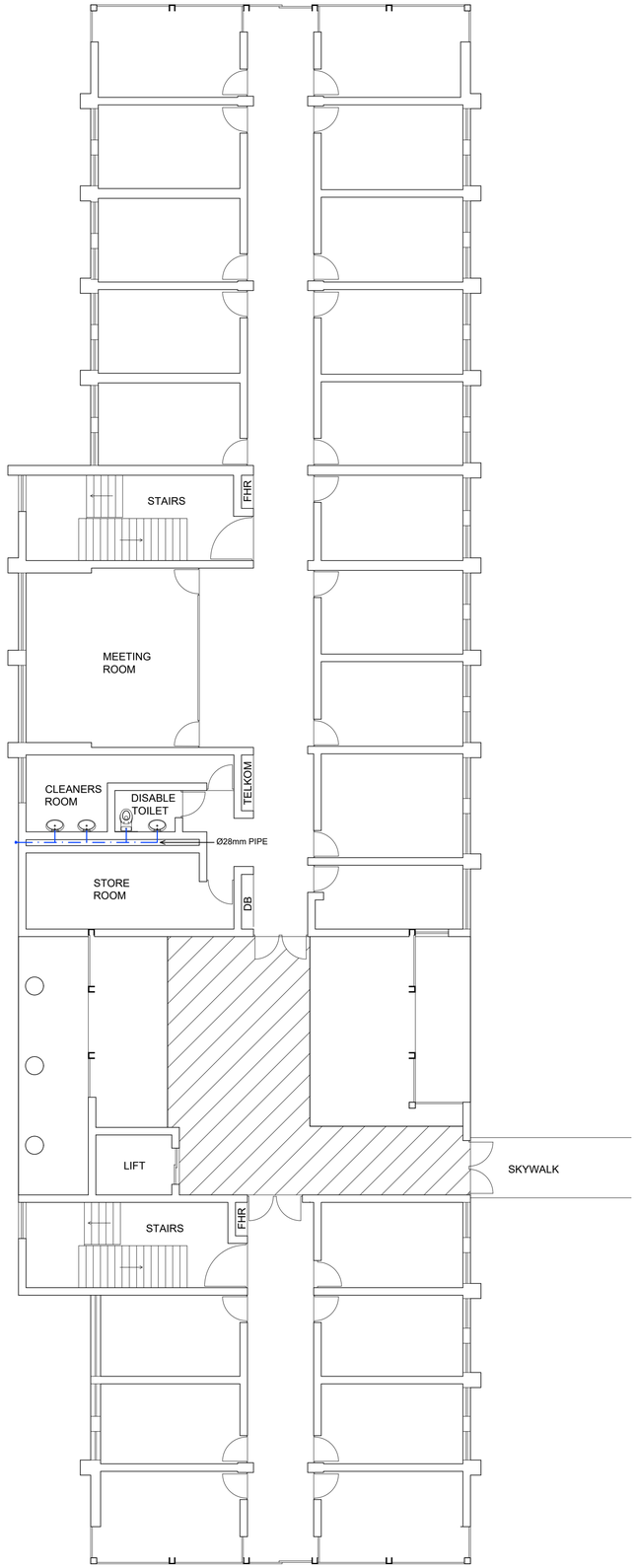
checked: R.ISHMAIL

drawing number: 0546-06

revision: T0



GROUND FLOOR



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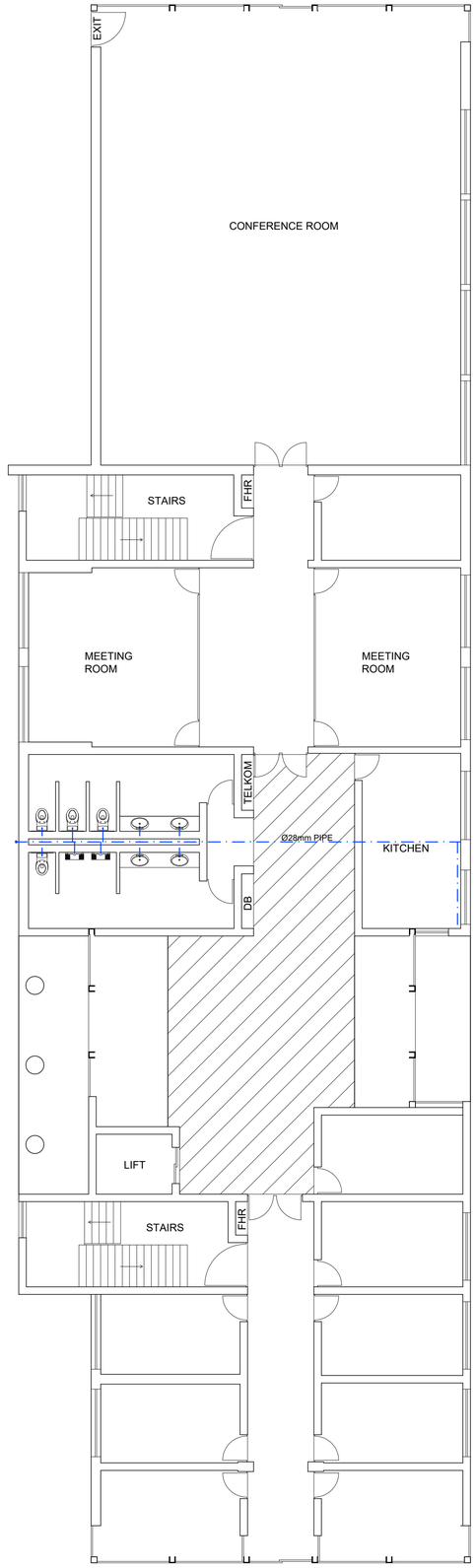

SECOND FLOOR

ISSUED FOR TENDER

No.	DATE	AMENDMENT	INIT.
T0	AUG 25	ISSUED FOR TENDER	R.I

LEGEND

- EXTERNAL TAP
- WATER LINE
- NONE RETURN VALVE.
- BALL ISOLATION VALVE.

as-built drawings

certified as-built drawings as per Centralised Drawing Archive AS-BUILT DRAWING REQUIREMENTS

name: N/A

date: N/A

professional registration no.: N/A

cad file name: 0546-07

page type: A1

client

SANBI
Biodiversity for Life
South African National Biodiversity Institute

consultant

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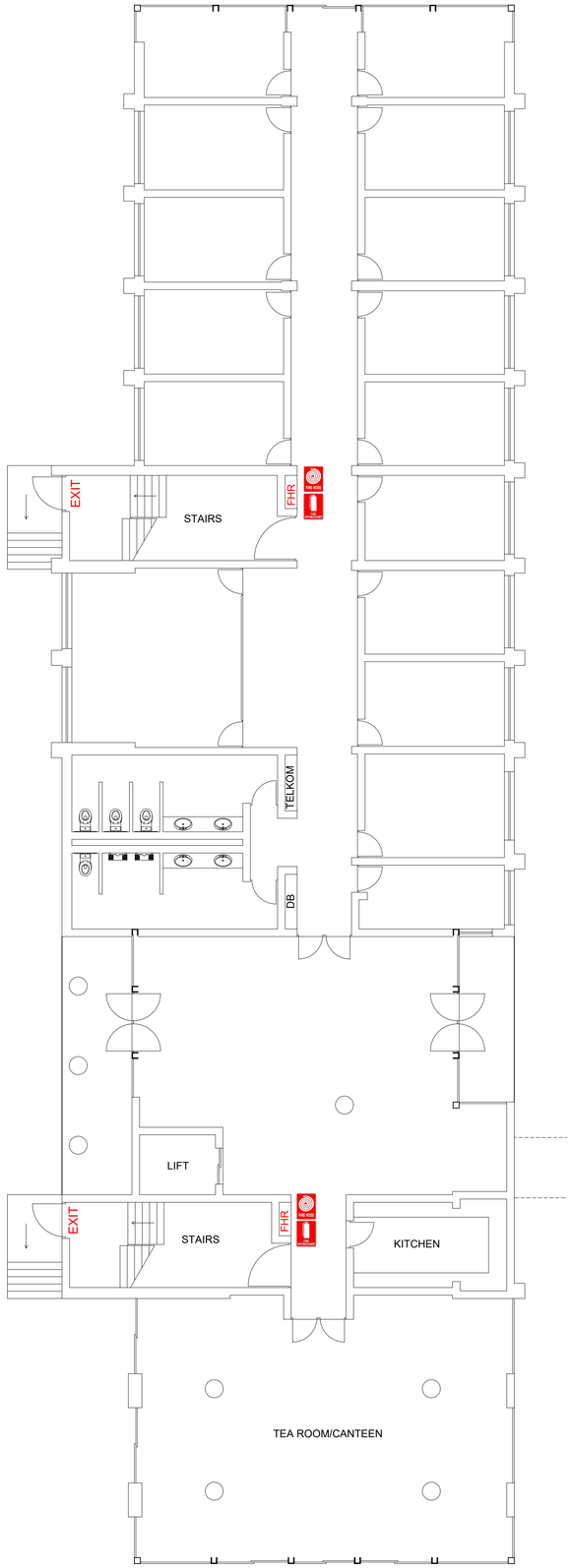
project number: 0546

drawing title: SANBI KIRSTENBOSCH: CBC WATER PLAN LAYOUT

ref.no. --	designed R ISHMAIL
scale 1:100	drawn T.ISMAIL
date AUG 25	checked R ISHMAIL

drawing number: 0546-07

revision: T0



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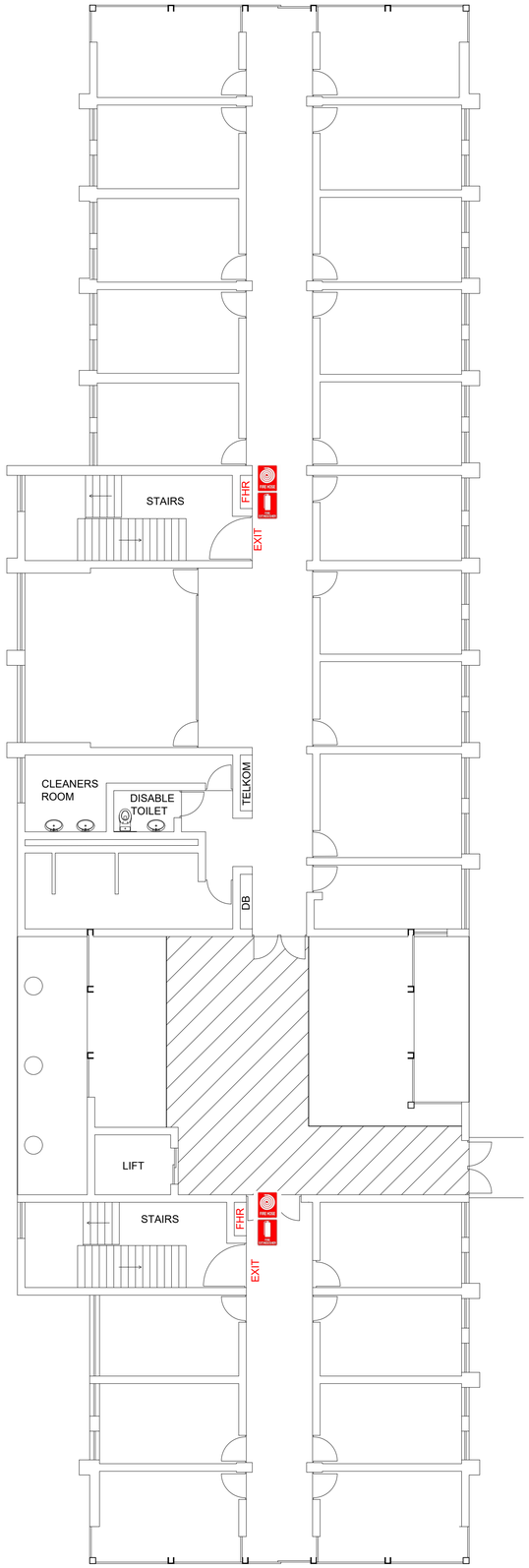
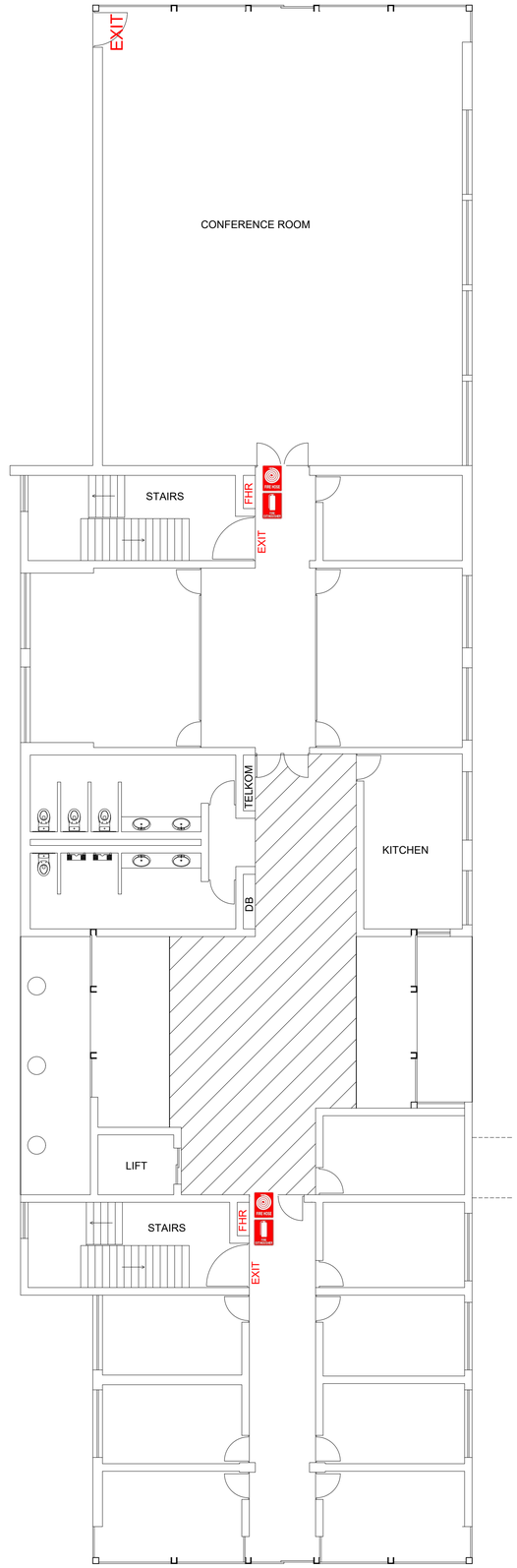


FIRST FLOOR



SECOND FLOOR

ISSUED FOR TENDER

No.	DATE	AMENDMENT	INIT.
T0	AUG 25	ISSUED FOR TENDER	R.I

LEGEND

- FIRE HOSE
- FIRE EXTINGUISHER

as-built drawings

certified as-built drawings as per Centralised Drawing Archive AS-BUILT DRAWING REQUIREMENTS

name: N/A

date: N/A

professional registration no.: N/A

cad file name: 0546-08

page type: A1

client

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project number: 0546

drawing title: SANBI KIRSTENBOSCH: CBC FIRE PROTECTION PLAN LAYOUT

ref.no. --

scale 1:100

date AUG 25

designed R ISHMAIL

drawn T.ISMAIL

checked R ISHMAIL

drawing number: 0546-08

revision: T0