

**UPGRADING AND RENOVATIONS OF EXISTING FACILITIES
AT UNISA SOLOMON MAHLANGU BUILDING, PRETORIA, 0002
TENDER BILL OF QUANTITIES**

Item No	Quantity	Rate	Amount
<u>SECTION No. 1 - BUILDING WORKS</u>			
<u>BILL NO 1</u>			
<u>PRELIMINARIES</u>			
<u>BUILDING AGREEMENT AND PRELIMINARIES</u>			
<p>The JBCC Series 2000 Principal Building Agreement (July 2007 edition 5.0 - reprint 1) prepared by the Joint Building Contract Committee shall be the applicable building agreement, amended as hereinafter described</p> <p>The JBCC Principal Building Agreement Contract Data EC and the JBCC Principal Building Agreement Contract Data CE form an integral part of this agreement</p> <p>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 these bills of quantities</p> <p>Contractors are referred to the abovementioned documents for the full intent and meaning of each clause thereof</p> <p>These clauses are hereinafter referred to by clause number and heading only. Where standard clauses or alternatives are not entirely applicable to this agreement such modifications, corrections or supplements as will apply are given under each relevant clause heading and such modifications, corrections or supplements shall take precedence notwithstanding anything contrary contained in the abovementioned documents</p> <p>Where any item is not relevant to this specific agreement such item is marked N/A, signifying "not applicable"</p>			
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BILL NO.1 : PRELIMINARIES			

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PREAMBLES FOR TRADES

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

Supplementary preambles are incorporated in these **bills of quantities** to satisfy the requirements of this project. Such supplementary preambles shall take precedence over the provisions of the said Model Preambles

The **contractor's** prices for all items throughout these **bills of quantities** must take account of and include for all of the obligations, requirements and specifications given in the said Model Preambles and in any supplementary preambles

PRICING OF PRELIMINARIES

Should the **contractor** select Option A in terms of subclause 3.2.1 in the **Contract Data - Contractor to Employer (CE)** for the purpose of adjustment of these **preliminaries**, the amount entered into the amount column in these **preliminaries** is to be divided into one or more of the three categories provided namely Fixed (F), Value Related (V) and Time Related (T)

SECTION A - PRINCIPAL BUILDING AGREEMENT

Definitions (A1)

1 Clause 1.0 - Definitions and interpretation

The measuring system used for the preparation of the **bills of quantities** is the Standard System of Measuring Building Work (sixth edition, revised 1999) published by the Association of South African Quantity Surveyors [1.1]

F:..... V:..... T:.....

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<u>Objective and preparations (A2 - A14)</u>				
1	Clause 2.0 - Offer acceptance and performance obligations F:..... V:..... T:.....	Item		
2	<p>Clause 3.0 - Documents</p> <p>The contract drawings are as listed on item 10 of Notes and Scope.</p> <p>Provision is made in the summary page of these bills of quantities for the inclusion of Value Added Tax (VAT) [3.5]</p> <p>The principal agent shall decide which portion of the priced document may be used as a specification of materials and goods or methods, if any [3.9]</p> <p>F:..... V:..... T:.....</p>	Item		
3	Clause 4.0 - Design responsibility F:..... V:..... T:.....	Item		
4	Clause 5.0 - Employer's agents F:..... V:..... T:.....	Item		
5	<p>Clause 6.0 - Contractor's site representative</p> <p>Claus 6 is amended by the addition of the following:- The names and CV's of the contractor's proposed management team shall be submitted to the principal agent prior to commencement on site, no changes shall be made nor shall any member of the said team be removed from the project while remaining in the employ of the contractor, without the principal agent's prior written approval.</p> <p>F:..... V:..... T:.....</p>	Item		
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1 Clause 7.0 - Compliance with laws and regulations

Clause 7.0 is amended by the addition of the following clause:-

“7.3 Occupational Health and Safety Act 1993:
Without limiting the generality of the provisions of clause 7.0 of the agreement, the contractor’s attention is drawn to the provisions of the Construction Regulations, 2003 issued in terms of the Occupational Health and Safety Act, 1993 in which it is specifically stated that the employer shall prepared a documented health and safety specification for the works (refer to Annexure N for a copy of the relevant specification) and that the employer shall ensure that the contractor has made provision for the cost of health and safety measures during the execution of the works. The contractor shall price opposite this item for compliance with the act and the regulations and the provisions of the aforementioned health and safety specification.”

“7.4 The **employer** reserves the right to pay direct (i.e. not through the **contractor**) for all or any permanent connections to local or other authority services, for which provisional amounts have been included within the selected sub-contract bill / section hereof. In the event of the **employer** paying direct for these charges, the **contractor** will not be entitled to a ten percent (10%) mark-up in terms of Clause 32.4. All such provisional amounts included in the **contract sum** will be omitted.”

See also Section C - Specific Preliminaries

F:..... V:..... T:.....

Item

2 Clause 8.0 - Works risk F:..... V:..... T:.....

Item

3 Clause 9.0 - Indemnities F:..... V:..... T:.....

Item

4 Clause 10.0 - General insurances F:.....
V:.....T:.....

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1	Clause 11.0 - Special insurances F:..... V:..... T:.....	Item		
2	Clause 12.0 - Effecting insurances F:..... V:.....T:.....	Item		
3	Clause 13.0 - AssignmentF:..... V:..... T:.....	Item		
4	Clause 14.0 - Security F:..... V:..... T:.....	Item		
	<u>Execution (A15 - A23)</u>			
5	Clause 15.0 - Preparation for and execution of the works F:..... V:..... T:.....	Item		
6	Clause 16.0 - Site and access <i>Clause 16.7 - Known services -</i> N/A <i>Clause 16.8 - Protection of trees</i> N/A F:..... V:..... T:.....	Item		
7	Clause 17.0 - Contract instructions F:..... V:..... T:.....	Item		
8	Clause 18.0 - Setting out of the works The contractor shall notify the principal agent if any encroachments of adjoining foundations, buildings, structures, pavements, boundaries, etc. exist in order that the necessary arrangements may be made for the rectification of any such encroachments [18.1]. F: V:.....T:.....	Item		
9	Clause 19.0 - Temporary works and plant Clause 19.1.1 - <i>Enclosure of the works</i> Clause 19.1.2 - <i>Office accommodation</i> Clause 19.2 - <i>Advertising rights and notice boards</i> F:..... V:..... T:.....	Item		
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1	<p>Clause 20.0 - Nominated subcontractors</p> <p>Refer to the provisions on general attendance hereinafter</p> <p>F:..... V:..... T:.....</p>	Item		
2	<p>Clause 21.0 - Selected subcontractors</p> <p>General attendance of n/s subcontractors for pricing by the contractor shall be in accordance with the n/s agreement. Notwithstanding this provision, general attendance shall be deemed to include for the contractor to provide free of charge to any n/s subcontractor such scaffolding as may reasonably be required by such n/s subcontractor for the execution of the relevant subcontract work</p> <p>F:..... V:..... T:.....</p>	Item		
3	<p>Clause 22.0 - Employer's direct contractors</p> <p>Work listed under the heading "DIRECT CONTRACTORS WORK" will commence during the execution of this contract and the contractor shall allow free access for the site for these direct contractors. The contractor shall prepare a programme in conjunction with these direct contractors in order to complete the work successfully.</p> <p>DIRECT CONTRACTORS WORK:</p> <p>F:..... V:..... T:.....</p>	Item		
4	<p>Clause 23.0 - Contractor's domestic subcontractors</p> <p>F:..... V:..... T:.....</p> <p><u>Completion (A24 - A30)</u></p>	Item		
5	<p>Clause 24.0 - Practical completion</p> <p>Intended date of practical completion and the penalty per calendar day for the works as a whole.</p> <p>12 moths from date of commencement</p> <p><i>Penalty: R5 000.00 per calendar day</i></p> <p>F:..... V:..... T:.....</p>	Item		
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1	<p>Clause 25.0 - Works completion</p> <p>Add the following to Clause 25.4</p> <p>25.4.1 Should the works reflected on the Works Completion list not be completed within a period of thirty (30) working days of the issue of thereof, penalties shall be applied at fifty percent (50%) of the penalties as set out in clause 42.2.8</p> <p>25.4.1 This period may be extended by the principal agent on condition that it is as a result of any cause beyond the contractor's reasonable control.</p> <p>The revision of the date for Works Completion shall be determined in accordance with Clause 29.0 which shall apply mutatis mutandis</p> <p>F:..... V:..... T:.....</p>			
2	<p>Clause 26.0 - Final completion F:..... V:..... T:.....</p>	Item		
3	<p>Clause 27.0 - Latent defects liability period</p> <p>F:..... V:..... T:.....</p>	Item		
4	<p>Clause 28.0 - Sectional completion</p> <p>Intended date of practical completion and the penalty per calendar for the works in sections:</p> <p style="text-align: center;">N/A</p> <p>F:..... V:..... T:.....</p>	Item		
5	<p>Clause 29.0 - Revision of date for practical completion</p> <p>ded by:-</p> <p>1) The addition of the following clauses:-</p> <p>“29.1 ACCELERATION</p> <p>29.1 Irrespective of whether or not the principal agent rules that the contractor is entitled to an extension of time or a revision of the date for practical completion, the principal</p>	Item		
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	<p>agent shall nevertheless, at any time, be entitled to instruct the contractor, in writing, to accelerate the progress of the remaining works, to ensure that the works are completed by the original date for practical completion or revised date as the case may be.</p> <p>29.2 Upon receipt of such instruction, the contractor shall take all necessary steps to ensure that the works are completed timeously, bearing in mind the provisions of C3.1., including the provision by him of additional resources, plant, manpower, etc and the working overtime or additional overtime beyond that contemplated at the time of tender (at all times adhering to the regulations and requirements of all authorities) and by all other adequate and proper means and methods. The contractor shall prove that such steps are being taken if called upon to do so.</p> <p>29.3 The contractor's entitlement to compensation arising out of or in respect of any revision to the date for practical completion that may have been granted by the principal agent, or alternatively, where the principal agent has instructed the contractor to accelerate, shall be adjudicated strictly in terms of Clause B10.3 hereof. The contractor shall not be entitled to any compensation of any nature whatsoever, other than that provided for in terms of Clause B10.3."</p>			
	F:..... V:..... T:.....	Item		
1	Clause 30.0 - Penalty for late or non-completion F:..... V:..... T:.....	Item		
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<u>Payment (A31 - A35)</u>				
1	<p>Clause 31.0 - Interim payment</p> <p>The inclusion of materials and goods stored off site in the amount authorised for payment in terms of clause 31.4 shall be at the sole discretion of the principal agent and such inclusion shall only be considered upon the provision, by the contractor, of an approved guarantee issued by a registered commercial bank. Clause 31.6.5 is therefore not applicable [31.4.2, 31.6.5]</p> <p>Materials and goods stored off site shall not be included in the amount authorised for payment [31.6.5]</p> <p>F:..... V:..... T:.....</p>	Item		
2	<p>Clause 32.0 - Adjustment to the contract value</p> <p>All fluctuations in costs, with the exception of fluctuations in the rate of Value Added Tax, shall be for the account of the contractor [32.13]</p> <p>Where prices are submitted by the contractor or n/s subcontractor during the progress of the works in respect of contract instructions or in regard to a claim under the terms of the contract and notwithstanding the fact that such prices may be used in an interim payment certificate, there is to be no presumption of acceptance. Should the principal agent wish to accept any such prices prior to the issue of the certificate of final completion, it shall be in writing</p> <p>F:..... V:..... T:.....</p>	Item		
3	<p>Clause 33.0 - Recovery of expense and loss</p> <p>F:..... V:..... T:.....</p>	Item		
4	<p>Clause 34.0 - Final account and final payment</p> <p>F:..... V:..... T:.....</p>	Item		
5	<p>Clause 35.0 - Payment to other partiesF:.....</p> <p>V:..... T:.....</p>	Item		
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<u>Termination (A36 - A39)</u>				
1	Clause 36.0 - Termination by employer - contractor's default F:..... V:..... T:.....	Item		
2	Clause 37.0 - Termination by employer - loss and damage F:..... V:..... T:.....	Item		
3	Clause 38.0 - Termination by contractor - employer's default F:..... V:..... T:.....	Item		
4	Clause 39.0 - Termination - cessation of the works F:..... V:..... T:.....	Item		
<u>Dispute (A40)</u>				
5	Clause 40.0 - Settlement of disputesF:.... V:..... T:.....	Item		
<u>Contract variables (A41 - A42)</u>				
6	Clause 41.0 - Post tender provisions The contractor is to complete before submission of his tender the JBCC Principal Building Agreement Contract Data CE F:..... V:..... T:.....	Item		
7	Clause 42.0 - Contractual agreement The required information of the contracting parties and the amount of the accepted contract sum shall be inserted in the contractual agreement for signature of the agreement by the contracting parties	Item		
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Contract Data - Contracting and Other Parties

1 1.0 CONTRACTING AND OTHER PARTIES

1.1 **Employer:**

Name	UNISA
Postal Address	PO Box 392, City of Tshwane
Telephone	012-429 3774
Fax	012- 429 2364
Domicilium	UNISA, Preller Street, Muckl
	City of Tshwane
Tax/VAT No	4360102869

Item

2 1.2 **Principal Agent: Project Manager**

UNISA

Item

3 1.3 **Agent service: Architecture**

Agent (1) REFER TO CONTRACT DATA

Item

4 1.4 **Agent service: Quantity Surveyor**

Agent (2) REFER TO CONTRACT DATA

Item

5 1.5 **Agent service: Mechanical & Fire Engineers**

Agent (3) REFER TO CONTRACT DATA

Item

6 1.6 **Agent service: Electrical**

Agent (4) REFER TO CONTRACT DATA

Item

7 1.3 **Agent service: Safety Consultant**

Agent (5) REFER TO CONTRACT DATA

Item

Contract Data - Contract and Site Information

8 2.0 CONTRACT AND SITE INFORMATION:

Item

9 2.1 The law applicable to this agreement

Republic of South Africa

Item

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1	2.2	Works Description: Upgrading and renovations of existing Facilities.	Item		
2	2.3	Site Description: UNISA SOLOMON MAHLANGU BUILDING, MUCKLEUNECK CAMPUS, PRETORIA, SOUTH AFRICA	Item		
3	2.4	Date on which possession of the site is intended to be given: on : Date to be confirmed with the successful bidder. The intention is to commence in January 2023	Item		
4	2.5	Period for the commencement of the works after the contractor takes possession of the site 5 Calendar days	Item		
5	2.6	Completion in sections are required NO	Item		
6	2.7	Waiver of the contractor's lien or right of continuing possession is required YES	Item		
7	2.8	Defined restrictions to the site area To be pointed out by the Principal Agent Tenderers shall establish by compulsory site inspection of the site conditions any restrictions imposed by existing buildings, limiting means of access and the like.	Item		
8	2.9	Geotechnical investigation of the site has been undertaken N/A	Item		
9	2.10	Existing premises will be occupied. NO	Item		
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Contract Data - Insurances and Securities

1 3.1 Contract works insurance

To be effected by the : **Contractor:**
For the sum of : **Contract sum plus 10%**
With a deductible of: **To be determined by the contractor**

Item

2 3.1 Supplementary/ special insurance to be effected

NO

Item

3 3.3 Public liability insurance to be effected by

To be effected by the : **Contractor:**
For the sum of : **R5 000 000.00**
With a deductible of: **To be determined by the contractor**

Item

4 3.4 Support insurance to be effected by the Contractor

Item

5 3.5 Special insurance to be effected by

N/A

Item

Contract Data - Practical Completion Dates and Penalties

6 4.1 Intended date of practical completion is:
14 Months from date of commencement

Penalty: R5 000.00 per calendar day

Item

7 4.2 Intended dates of practical completion where sectional completion is required and the penalty per calendar day for the works in **sections:**
N/A

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Contract Data - Documents and General

1 5.1 Construction document copies to be supplied to the contractor free of charge

Three

Item

2 5.2 The priced document may be used as a specification of materials and goods

No

Item

3 5.3 The contractor shall provide a schedule of rates

Yes

Item

4 5.4 On acceptance of the tender the priced document is to be submitted within

the priced document is part of tender submission

Item

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SECTION B - PRELIMINARIES

Definitions and interpretation (B1)

1 Clause 1.0 - Definitions and interpretation

F:..... V:..... T:.....

Item

Documents (B2)

2 Clause 2.1 - Checking of documents

Clause 2.1 is amended by the addition of the following:-

These bills of quantities are not to be used for the ordering of materials nor as the final specification for materials and workmanship.

"These provisional **bills of quantities** contain pages as set out in the index hereto, and annexures as follows:-

JBCC Series 2000 Form of Tender

JBCC Series 2000 Waiver of Contractor's Lien

Occupational Health and Safety Specification

No alteration, erasure, amendment, note, deletion, insertion, omission or addition is to be made to this document. Any such alteration, etc, made will not be recognised, but the reading of these **bills of quantities**, as prepared by the quantity surveyor, will be adhered to.

The Tenderer is referred to the "Model Preambles (2008 Edition)" issued with these **bills of quantities** for full descriptions of materials and methods referred to in these **bills of quantities** insofar as they apply. Where descriptions in the bills differ from those in the "Model Preambles", the descriptions in the bills are to apply.

No claim whatsoever shall be entertained in respect of errors in pricing due to brevity of descriptions of items

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in the bills which are fully described when read in conjunction with the relevant "Model Preambles."

The rates contained in the priced **bills of quantities** shall apply irrespective of the final quantities of the different classes and kinds of work actually executed. No claims for extras, loss of profit, variation of rates or other similar claims will be entertained as a result of any variations whatsoever between the **contract sum** and the final value of the **works**.

F:..... V:..... T:.....

Item

1 Clause 2.2 - Provisional **bills of quantities**

These **bills of quantities** are in multiple procurement format and are provisionally measured thus subject to remeasurement

F:..... V:..... T:.....

Item

2 Clause 2.3 - Availability of construction documentation

The **budgetary allowances** and selected subcontract amounts allocated for subsequent trades included in this **agreement** will be separately procured, based on multiple procurement of selected subcontractors during the **construction period**

F:..... V:..... T:.....

Item

Previous work and adjoining properties (B3)

3 Clause 3.1 - Previous work - dimensional accuracy

F:..... V:..... T:.....

Item

4 Clause 3.2 - Previous work - defects

F:..... V:..... T:.....

Item

5 Clause 3.3 - Inspection of adjoining properties

F:..... V:..... T:.....

Item

Samples, shop drawings and manufacturer's instructions (B4)

6 Clause 4.1 - Samples of materials

F:..... V:..... T:.....

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1	Clause 4.2 - Workmanship samples F:..... V:..... T:.....	Item
2	Clause 4.3 - Shop drawings F:..... V:..... T:.....	Item
3	Clause 4.4 - Compliance with manufacturer's instructionsF:..... V:..... T:.....	Item
<u>Deposits and fees (B5)</u>		
4	Clause 5.1 - Deposits and fees F:..... V:..... T:.....	Item
<u>Temporary services (B6)</u>		
5	Clause 6.1 - Water F:..... V:..... T:.....	Item
6	Clause 6.2 - Electricity F:..... V:..... T:.....	Item
7	Clause 6.3 - Telecommunication facilities F:..... V:..... T:.....	Item
8	Clause 6.4 - Ablution facilities F:..... V:..... T:.....	Item
<u>Prime cost amounts (B7)</u>		
9	Clause 7.1 - Responsibility for prime cost amounts F:..... V:..... T:.....	Item
<u>Special attendance on n/s subcontractors (B8)</u>		
10	Clause 8.1 - Special attendance F:..... V:..... T:.....	Item
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<u>General (B9)</u>				
1	Clause 9.1 - Protection of the works F:..... V:..... T:.....	Item		
2	Clause 9.2 - Protection/isolation of existing/sectionally occupied works F:..... V:..... T:.....	Item		
3	Clause 9.3 - Security of the works F:..... V:..... T:.....	Item		
4	Clause 9.4 - Notice before covering work F:..... V:..... T:.....	Item		
5	Clause 9.5 - Disturbance F:..... V:..... T:.....	Item		
6	Clause 9.6 - Environmental disturbance F:..... V:..... T:	Item		
7	Clause 9.7 - Works cleaning and clearing F:..... V:..... T:.....	Item		
8	Clause 9.8 - Vermin F:..... V:..... T:.....	Item		
9	Clause 9.9 - Overhand work F:..... V:..... T:.....	Item		
<u>Schedule of variables (B10)</u>				
Information necessary for elections and completion of those clauses contained in the schedule which are necessary for tender purposes is given hereunder. Where no information is given it shall mean that no specific requirements are expected or that the clause is not relevant to this specific contract				
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10.1 - Provisional bills of quantities [clause 2.2] The quantities are provisional Yes					
10.2 - Availability of construction documentation [clause 2.3] Construction documentation is complete Yes					
10.3 - Previous work - dimensional accuracy [clause 3.1]					
10.4 - Previous work - defects [clause 3.2]					
10.5 - Inspection of adjoining properties [clause 3.3]					
10.6 - Water [clause 7.2] Option A (by contractor) yes/no Option B (by employer - free of charge) NO Option C (by employer - metered) yes/no					
10.7 - Electricity [clause 7.3] Option A (by contractor) yes/no Option B (by employer - free of charge) NO Option C (by employer - metered) yes/no					
10.8 - Telecommunications [clause 7.4] Telephone yes/no Facsimile NO E-mail yes/no					
10.9 - Ablution facilities [clause 7.5] Option A (by contractor) yes/no Option B (by employer) NO					
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<div>10.10 - Protection of the works [clause 9.1]</div> <div>10.11 - Protection/isolation of existing/sectionally occupied works [clause 9.2]<div>Protection/isolation is required<div></div><div>Yes</div></div></div> <div>10.12 - Disturbance [clause 9.5]</div> <div>10.13 - Environmental disturbance [clause 9.6]</div>				
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SECTION C - SPECIFIC PRELIMINARIES

1 Site instructions

Contract Instructions issued on **site** are to be recorded in triplicate in a **site** instruction book which is to be maintained on site by the **contractor**

F:..... V:.....
T:.....

Item

2 Warranties for material and workmanship

Where warranties for materials and/or workmanship are called for, the **contractor** shall obtain a written warranty, addressed to the **employer**, from the firm supplying the materials and/or doing the work and shall deliver same to the **principal agent** on the **final completion** of the **contract**. The warranty shall state that workmanship, materials and installation are warrantee for a specified period from the date of **final completion** and that any **defects** that may arise during the specified period shall be made good at the expense of the firm supplying the materials and/or doing the work, upon written notice to do so. The warranty will not be enforced if the work is damaged by **defects** in the construction of the building in which case the responsibility for replacement shall rest entirely with the **contractor**

F:..... V:..... T:.....

Item

3 Co-operation of contractor for cost management

It is specifically agreed that the **contractor** accepts the obligation of assisting the **principal agent** in implementing proper cost management. The **contractor** will be advised by the **principal agent** of all cost management procedures which will be implemented to ensure that the final building cost does not exceed the budget. The **principal agent** undertakes to make available to the **contractor** all **budgetary allowances** and cost assessments/reports to enable the proper procedure to be implemented and the **contractor** shall attend all cost plan review and cost management meetings. The **contractor** undertakes to extend these procedures, as necessary, to all subcontractors

F:..... V:..... T:.....

Item

Carried to Collection

R

Bill No. 1
BILL NO.1 : PRELIMINARIES

**UPGRADING AND RENOVATIONS OF EXISTING FACILITIES
AT UNISA SOLOMON MAHLANGU BUILDING, PRETORIA, 0002
TENDER BILL OF QUANTITIES**

1 HEALTH AND SAFETY

Provision and maintenance of all safety equipment such as shoes, helmets, safety belts, nozzles as set out in the Construction Regulations 2003, issued under the Occupational Health and Safety Act, 1993 (Act No. 85 of 1993)

F:_____ V:_____ T:_____

SUMMARY OF CATEGORIES

2 Category: Fixed R

3 Category: Value R

4 Category: Time R

Item

Item

Item

Item

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Bill No. 1
BILL NO.1 : PRELIMINARIES

**UPGRADING AND RENOVATIONS OF EXISTING FACILITIES
AT UNISA SOLOMON MAHLANGU BUILDING, PRETORIA, 0002
TENDER BILL OF QUANTITIES**

SECTION 1 : BUILDING WORKS		
BILL NO.1 : PRELIMINARIES		
<u>COLLECTION</u>		
	Page No	Amount
Total Brought Forward from Page No.	1	
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Carried Forward to Summary of Section No. 1		R
Bill No. 1		
BILL NO.1 : PRELIMINARIES		

**UPGRADING AND RENOVATIONS OF EXISTING FACILITIES
AT UNISA SOLOMON MAHLANGU BUILDING, PRETORIA, 0002
TENDER BILL OF QUANTITIES**

Item No		Unit	Quantity	Rate	Amount
	<u>SECTION No. 1 - BUILDING WORKS</u>				
	<u>BILL NO. 2</u>				
	<u>DEMOLITIONS & ALTERATIONS</u>				
	<u>PREAMBLES</u>				
	For preambles see "Model Preambles for Trades".				
	<u>SUPPLEMENTARY PREAMBLES</u>				
	<u>View site</u>				
	Before submitting his tender the contractor shall visit the site and satisfy himself as to the nature and extent of the work to be done and the value of the materials contained in the buildings or portions of the buildings to be demolished. No claim for any variations of the contract sum in respect of the nature and extent of the work or of inferior or damaged materials will be entertained				
	<u>Explosives</u>				
	No explosives whatsoever may be used for demolition purposes unless otherwise stated				
	<u>General</u>				
	The contractor shall carry out the whole of the works with as little mess and noise as possible and with a minimum of disturbance to adjoining premises and their tenants. He shall provide proper protection and provide, erect and remove when directed, any temporary tarpaulins that may be necessary during the progress of the works, all to the satisfaction of the principal agent				
	Water supply pipes and other piping that may be encountered and found necessary to disconnect or cut, shall				
	Carried to Collection			R	
	Bill No. 2				
	BILL NO.2 : DEMOLITIONS & ALTERATIONS				

**UPGRADING AND RENOVATIONS OF EXISTING FACILITIES
AT UNISA SOLOMON MAHLANGU BUILDING, PRETORIA, 0002
TENDER BILL OF QUANTITIES**

<p>be effectually stopped off or grubbed up and removed, and any new connections that may be necessary shall be made with proper fittings, to the satisfaction of the principal agent</p> <p>Doors, fanlights, fittings, frames, linings, etc which are to be re-used shall be thoroughly overhauled before refixing including taking off, easing and rehangng, cramping up, re-wedging as required and making good cramps, dowels, etc, and easing, oiling, adjusting and repairing ironmongery as necessary, replacing any glass damaged in removal or subsequently and stopping up all nail and screw holes with tinted plastic wood to match timber, unless otherwise described. Re-painting or re-varnishing is given separately</p> <p>Prices for taking out of doors, windows, etc shall include for removal of all beads, architraves, ironmongery, etc</p> <p>Prices for taking out and removing doors and frames shall include for removing door stops, cabin hooks, etc and making good floor and wall finishes to match existing</p> <p>With regard to building up of openings in existing walls, cement screeds and pavings, granolithic, tops of walls, etc, shall be levelled and prepared for raising of brickwork</p> <p>Making good of finishes shall include making good of the brick and concrete surfaces onto which the new finishes are applied, where necessary</p> <p>The contractor will be required to take all dimensions affecting the existing buildings on the site and he will be held solely responsible for the accuracy of all such dimensions where used in the manufacture of new items (doors, windows, fittings, etc)</p>					
Carried to Collection					
<p>Bill No. 2 BILL NO.2 : DEMOLITIONS & ALTERATIONS</p>				R	

**UPGRADING AND RENOVATIONS OF EXISTING FACILITIES
AT UNISA SOLOMON MAHLANGU BUILDING, PRETORIA, 0002
TENDER BILL OF QUANTITIES**

<p>The contractor shall carry out the whole of the works with as little mess and noise as possible and with a minimum of disturbance to adjoining premises and their tenants. He shall provide proper protection and provide, erect and remove when directed, any temporary tarpaulins that may be necessary during the progress of the works, all to the satisfaction of the principal agent</p>														
<p>Water supply pipes and other piping that may be encountered and found necessary to disconnect or cut, shall be effectually stopped off or grubbed up and removed, and any new connections that may be necessary shall be made with proper fittings, to the satisfaction of the principal agent</p>														
<p>Prices for taking out of doors, windows, etc shall include for removal of all beads, architraves, ironmongery, etc</p>														
<p>The contractor will be required to take all dimensions affecting the existing buildings on the site and he will be held solely responsible for the accuracy of all such dimensions where used in the manufacture of new items (doors, windows, fittings, etc)</p>														
<p>The Contractor will be held solely responsible for checking all floor levels and dimensions in the existing building in order that the new extensions may be correctly lined up. Should any discrepancies be found in the Architect's drawings he should be asked for a decision before continuing with the work.</p>														
<p>The Contractor will be held solely responsible for any damage to persons and property, for the safety of the new and existing structure throughout the whole of the contract and must make good at his own expense any damage that may occur.</p>														
<p>Old materials, which are to become the property of the Contractor as they are pulled down, together with all building debris from any cause whatsoever, are to be immediately carted away and the site left clean and unencumbered. Allow for watering the works sufficiently to prevent nuisance from dust.</p>														
<p>Allow for giving notice to local or other authorities for disconnecting electric light, water and drainage mains and removing telephone wires, etc, and pay all fees in connection therewith and afford every facility to the workmen carrying out this work.</p>														
<p style="text-align: right;">Carried to Collection</p>														
<p>Bill No. 2 BILL NO.2 : DEMOLITIONS & ALTERATIONS</p>														

**UPGRADING AND RENOVATIONS OF EXISTING FACILITIES
AT UNISA SOLOMON MAHLANGU BUILDING, PRETORIA, 0002
TENDER BILL OF QUANTITIES**

Old materials, if sound and suitable and approved by the Architect, may be re-used in the new structure. This applies particularly to timber which may be re-used for joists, bracing, fittings, etc and broken bricks and other similar material which may be used as filling and hardcore.

Wherever old materials are used instead of the new materials measured, an adjustment will be made by the Quantity Surveyor in the final settlement of accounts by deducting the net cost of the new materials and crediting the Contractor with the amount, if any, allowed by him for the old materials.

The term "take out" includes all work taken out, taken up, taken down, taken off, etc ; the term "break up" includes all work broken up, broken down, broken off, etc and the term "hack off" includes all work hacked off, hacked up, hacked down, etc.

The term "make good" is to include all labour and material required to match existing work.

The terms "take out and remove door", "take out and remove window", "carefully take out, set aside for re-use and later refix window in new position", etc are to include all materials connected with such door or window such as doors, windows, fanlights, frames, ironmongery, glass, architraves, beads, fillets, cramps, dowels, etc.

The terms "take out and remove sink unit", "take out and remove lavatory basin", "carefully take out, set aside for re-use and later refix W.C. suite in new position", etc are to include all materials connected with such sanitary fittings such as brackets, cisterns, taps, traps, flushing valves, flush pipes, etc and are to include for the cutting back and stopping off of supply and waste pipes.

Strutting, shoring, etc. incidental to the alterations shall be deemed to be included in the descriptions.

TEMPORARY BARRIERS, SCREENS, ETC

Temporary barriers, screens, etc including removal

1	Temporary hoarding and diamond mesh covered with shade cloth 2.7m high and removal later	m	180	
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Carried to Collection

Bill No. 2

BILL NO.2 : DEMOLITIONS & ALTERATIONS

R

**UPGRADING AND RENOVATIONS OF EXISTING FACILITIES
AT UNISA SOLOMON MAHLANGU BUILDING, PRETORIA, 0002
TENDER BILL OF QUANTITIES**

1	Extra over for double gate and frame1 511 x 2032mm high	No	1	
2	Temporary hoarding and framework of drywall one side unpainted ± 3m high and removal later.	m	50	
3	Extra over for double door and frame1 511 x 2032mm high.	No	2	
<u>REMOVAL OF EXISTING WORK</u>				
<u>Break Up And Remove Reinforced Concrete</u>				
4	Concrete surface beds, ramps, steps, etc.	m3	55	
5	Scabble and prepare existing concrete surface bed to receive new concrete.	m2	455	
6	Slabs.	m3	91	
7	Walling.	m3	18	
8	Chop back edge of 175mm thick concrete slab at an angle of 45 degrees to receive new concrete slab including applying Prostruct 630 wet to dry epoxy before casting concrete and supporting slab along one side.	m	532	
<u>Breaking down and removing brickwork etc</u>				
9	One brick walls	m2	345	
10	Half brickwall	m2	421	
<u>Taking Down And Removing Roofs, Floors, Panelling, Ceilings, Partitions, Etc</u>				
11	Vinyl Floors	m2	1,200	
12	Carpets	m2	2,591	
13	Drywall partitions	m	2,900	
14	Blinds	No	520	
15	Signage		Item	
Carried to Collection				R
Bill No. 2 BILL NO.2 : DEMOLITIONS & ALTERATIONS				

UPGRADING AND RENOVATIONS OF EXISTING FACILITIES
AT UNISA SOLOMON MAHLANGU BUILDING, PRETORIA, 0002
TENDER BILL OF QUANTITIES

<u>Taking Out And Removing Sundry Joinery Work, Etc</u>			
1	Timber skirting and quadrant and make good plaster to walls.	m	3,560
<u>Take Out And Remove Doors, Windows, Etc. From Brickwork To be Demolished</u>			
2	Timber door and frame not exceeding 2,5m2.	No	255
3	Ditto, but exceeding 2,5m2 and not exceeding 5m2.	No	192
<u>Taking Out And Removing Doors, Windows Etc. Including Thresholds, Sills, Etc. And Making Good Cement Plaster And Paintwork On Both Sides And Into Reveals</u>			
4	Timber door and frame not exceeding 2,5m2.	No	201
5	Aluminium window not exceeding 2,5m2.	No	356
<u>Hack Up/Off And Remove Ceramic Tile Floor And Wall Finishes Including Removing Mortar Bed Or Backing And Preparing Concrete Or Brick Surfaces For New Screed, Plaster Or Tile Finishes.</u>			
6	Ceramic tiles to floors.	m2	1,120
<u>Take Out And Remove Piping, Sanitary Fittings, Etc. Including Disconnecting Piping From Fittings And Making Good Screeded Floor And Plastered Wall Finishes</u>			
<u>SUNDRIES</u>			
<u>Protection of existing floors</u>			
7	Carefully protect existing vinyl floors from being damaged during construction up until site handover of the building.	m2	7,363
8	Apply two coats wax polish on existing vinyl floor.	m2	7,363
<u>Sundries</u>			
9	Allow the sum of R200,000.00 for demolitions and servicing of existing installations.	Item	200,000.00
Carried to Collection			R
Bill No. 2 BILL NO.2 : DEMOLITIONS & ALTERATIONS			

**UPGRADING AND RENOVATIONS OF EXISTING FACILITIES
AT UNISA SOLOMON MAHLANGU BUILDING, PRETORIA, 0002
TENDER BILL OF QUANTITIES**

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**UPGRADING AND RENOVATIONS OF EXISTING FACILITIES
AT UNISA SOLOMON MAHLANGU BUILDING, PRETORIA, 0002
TENDER BILL OF QUANTITIES**

Item No		Quantity	Rate	Amount
<u>SECTION No. 1 - BUILDING WORKS</u>				
<u>BILL No. 3</u>				
<u>EARTHWORKS</u>				
<u>PREAMBLES</u>				
For preambles see "Model Preambles for Trades"				
<u>SUPPLEMENTARY PREAMBLES</u>				
<u>Preambles</u>				
The Standard Preambles and the Notes in the various trade bills are to, and do, apply equally to this section.				
<u>SITE CLEARANCE ETC</u>				
<u>Site clearance</u>				
1	Digging up and removing rubbish, debris, vegetation, hedges, shrubs and trees not exceeding 200mm girth, bush, etc.	m2	100	
2	Stripping average 150mm thick layer of vegetable soil including carting away to a dumping site to be located by the contractor.	m2	100	
<u>EXCAVATIONS, FILLING, ETC</u>				
<u>Excavation in earth not exceeding 2m deep</u>				
3	Excavate in earth for surface trenches not exceeding 2000mm deep.	m3	125	
<u>Extra over trench and hole excavations in earth for excavation in</u>				
4	Extra over excavations in earth to trenches for excavation in soft rock.	m3	19	
5	Ditto, but in hard rock.	m3	44	
Carried to Collection				R
Bill No. 3				
BILL NO.3 : EARTHWORKS				

**UPGRADING AND RENOVATIONS OF EXISTING FACILITIES
AT UNISA SOLOMON MAHLANGU BUILDING, PRETORIA, 0002
TENDER BILL OF QUANTITIES**

<u>Working space</u>				
1	Excavate in earth for working space (at Contractor's discretion) not exceeding 1300mm deep to side of the building of brick wall, fill and consolidate spoil on completion. (Distance from face of wall to side of excavation is 170mm).	m2	260	
<u>Extra over all excavations for carting away</u>				
2	Extra over all excavations for carting away from the site all surplus excavated material.	m3	58	
<u>Risk of collapse of excavations</u>				
3	Sides of trench and hole excavations not exceeding 1,5m deep.	m2	312	
<u>G5 material supplied by the contractor compacted to 93% Mod AASHTO density</u>				
4	Under floors, steps, pavings, etc.	m3	82	
<u>Keeping excavations free of water</u>				
5	Keeping excavations free of all water other than subterranean water.		Item	
<u>Compaction of surfaces</u>				
6	Compaction of ground surface under floors etc including scarifying for a depth of 150mm, breaking down oversize material, adding suitable material where necessary and compacting to 93% Mod AASHTO density.	m2	95	
<u>Coarse river sand filling supplied by the contractor</u>				
7	Under floors, steps, paving, etc.	m3	5	
<u>SOIL POISONING</u>				
<u>Soil insecticide</u>				
8	Under floors etc including forming and poisoning shallow furrows against foundation walls etc, filling in furrows and ramming.	m2	95	
9	To bottoms of trenches.	m2	416	
Carried to Collection				R
Bill No. 3 BILL NO.3 : EARTHWORKS				

**UPGRADING AND RENOVATIONS OF EXISTING FACILITIES
AT UNISA SOLOMON MAHLANGU BUILDING, PRETORIA, 0002
TENDER BILL OF QUANTITIES**

SECTION 1 : BUILDING WORKS

BILL NO.3 : EARTHWORKS

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Bill No. 3

BILL NO.3 : EARTHWORKS

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**UPGRADING AND RENOVATIONS OF EXISTING FACILITIES
AT UNISA SOLOMON MAHLANGU BUILDING, PRETORIA, 0002
TENDER BILL OF QUANTITIES**

Item No	Quantity	Rate	Amount
<u>SECTION No. 1 - BUILDING WORKS</u>			
<u>BILL No. 4</u>			
<u>CONCRETE, FORMWORK AND REINFORCEMENT</u>			
<u>PREAMBLES</u>			
For preambles see "Model Preambles for Trades".			
<u>SUPPLEMENTARY PREAMBLES</u>			
<u>Preambles</u>			
The Standard Preambles and the Notes in the various trade bills are to, and do, apply equally to this section.			
<u>Proprietary Products In Descriptions</u>			
Proprietary products shall be used as specified. Substitute products of similar quality and specification may only be used with prior approval by the Principal Agent			
<u>Cost Of Tests</u>			
The costs of making, storing and testing of concrete test cubes as required under clause 7 "Tests" of SABS 1200 G shall include the cost of providing cube moulds necessary for the purpose, for testing costs and for submitting reports on the tests to the architect. The testing shall be undertaken by an independent firm or institution nominated by the contractor to the approval of the architect. (Test cubes are measured separately)Should the strength required for the concrete in any portion of the structure not be attained in the test cubes, or should any concrete whatsoever be defective the portion in question is to be demolished and replaced at the expense of the Contractor.			
Carried to Collection			R
Bill No. 4 BILL NO.4 : CONCRETE, FORMWORK & REINFORCEM			

**UPGRADING AND RENOVATIONS OF EXISTING FACILITIES
AT UNISA SOLOMON MAHLANGU BUILDING, PRETORIA, 0002
TENDER BILL OF QUANTITIES**

Cost of tests

The costs of making, storing and testing of concrete test cubes as required under clause 7 "Tests" of SABS 1200 G shall include the cost of providing cube moulds necessary for the purpose, for testing costs and for submitting reports on the tests to the principal agent. The testing shall be undertaken by an independent firm or institution nominated by the contractor to the approval of the principal agent. (Test cubes are measured separately)

Breeze Concrete

Breeze concrete shall consist of twelve parts clean dry furnace ash, free from coal or other foreign matter, to one part cement (1:12); the ash graded up to particles which will pass a 16,5mm ring from a minimum which fails to pass a 4,75mm mesh. The finer materials from the screening are to be first mixed with the cement into a mortar and the ash added afterwards and thoroughly incorporated

Lightweight Concrete

Lightweight concrete shall have a density of 600kg/m³ for the top 50mm and 400kg/m³ for the remaining thickness. The minimum thickness at outlets, channels, etc shall be 50mm

Reinforced Concrete

All reinforced concrete is to be compacted with a mechanical vibrator.

Formwork

Description of formwork shall be deemed to include use and waste only (except where described as "left in" or "permanent"), for fitting together in the required forms, wedging, plumbing and fixing to true angles and surfaces as necessary to ensure easy release during stripping and for reconditioning as necessary before re-use

The vertical strutting shall be carried down to such construction as is sufficiently strong to afford the required support without damage and shall remain in position until the newly constructed work is able to support itself.

Carried to Collection

Bill No. 4
BILL NO.4 : CONCRETE, FORMWORK & REINFORCEM

R

**UPGRADING AND RENOVATIONS OF EXISTING FACILITIES
AT UNISA SOLOMON MAHLANGU BUILDING, PRETORIA, 0002
TENDER BILL OF QUANTITIES**

All formwork shall include for propping to not exceeding 3500mm high unless otherwise described.

Formwork to sides of walls and columns shall be to walls and columns not exceeding 3500mm high unless otherwise described.

Formworks to soffits of solid etc. shall be deemed to be slabs not exceeding 250mm thick unless otherwise described

Formwork to sides of bases, pile caps, ground beams, etc will only be measured where it is prescribed by the engineer for design reasons. Formwork necessitated by irregularity or collapse of excavated faces will not be measured and the cost thereof shall be deemed to be included in the allowance for taking the risk of collapse of the sides of the excavations, provision for which is made in "Earthworks"

REINFORCED CONCRETE CAST AGAINST EXCAVATED SURFACES

25MPa/19mm concrete in

1	Surface beds on waterproof sheeting.	m3	12
2	Slabs including beams and inverted beams.	m3	19
3	Footings.	m3	31
4	Stairs.	m3	2
5	Ramps.	m3	1

CONCRETE SUNDRIES

Finishing top surfaces of concrete smooth with a wood float

6	Surface beds, slabs, etc.	m2	198
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FORMWORK

Rough Formwork To

7	Sides and soffits of slab.	m2	96
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MOVEMENT JOINTS, ETC

Carried to Collection

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Bill No. 4
BILL NO.4 : CONCRETE, FORMWORK & REINFORCEM

UPGRADING AND RENOVATIONS OF EXISTING FACILITIES
AT UNISA SOLOMON MAHLANGU BUILDING, PRETORIA, 0002
TENDER BILL OF QUANTITIES

Bitumen impregnated soft board expansion joints

- | | | | |
|---|--|---|----|
| 1 | Joint formed of one layer 10mm thick soft board set between vertical concrete or brick surfaces. | m | 50 |
|---|--|---|----|

REINFORCEMENT

High tensile steel bar reinforcement to structural concrete work

- | | | | |
|---|----------------|---|------|
| 2 | Diameter bars. | t | 5.75 |
|---|----------------|---|------|

Fabric reinforcement to concrete work

- | | | | |
|---|--|----|----|
| 3 | High tensile steel mesh Ref. 193 to concrete surface beds, slabs, etc. | m2 | 95 |
|---|--|----|----|

Carried to Collection

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Bill No. 4
BILL NO.4 : CONCRETE, FORMWORK & REINFORCEMENT

**UPGRADING AND RENOVATIONS OF EXISTING FACILITIES
AT UNISA SOLOMON MAHLANGU BUILDING, PRETORIA, 0002
TENDER BILL OF QUANTITIES**

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UPGRADING AND RENOVATIONS OF EXISTING FACILITIES
AT UNISA SOLOMON MAHLANGU BUILDING, PRETORIA, 0002
TENDER BILL OF QUANTITIES

Item No		Quantity	Rate	Amount
	<u>SECTION No. 1 - BUILDING WORKS</u>			
	<u>BILL NO. 5</u>			
	<u>WATERPROOFING</u>			
	<u>PREAMBLES</u>			
	For preambles see "Model Preambles for Trades".			
	<u>SUPPLEMENTARY PREAMBLES</u>			
	<u>Preambles</u>			
	The Standard Preambles and the Notes in the various trade bills are to, and do, apply equally to this section.			
	<u>DAMP PROOFING TO WALLS AND FLOORS</u>			
	<u>Derbigum waterproofing membrane</u>			
1	Under slabs.	m2	96	
	<u>DAMP-PROOFING OF WALLS AND FLOORS</u>			
	<u>One layer of 375 micron "Consol Plastics Brikgrip DPC" or other equal and approved embossed damp proof course</u>			
2	In walls.	m2	35	
	<u>One layer of 250 micron "Consol Plastics Gunplas USB Green" or other equal and approved waterproof sheeting sealed at laps with "Gunplas Pressure Sensitive Tape"</u>			
3	Under surface beds and ramps.	m2	95	
	<u>JOINT SEALANTS, ETC.</u>			
4	Seal and point around aluminium and/or metal window frames with an approved external quality, sealing compound applied with a pressure caulking gun.	m	17	
	Carried to Collection			
	Bill No. 5			
	BILL NO.5 : WATERPROOFING			
			R	

**UPGRADING AND RENOVATIONS OF EXISTING FACILITIES
AT UNISA SOLOMON MAHLANGU BUILDING, PRETORIA, 0002
TENDER BILL OF QUANTITIES**

1 Rake out 10mm wide joint filler on vertical surfaces of brickwork or concrete for a depth of 15mm and clean, prime and caulk with an approved external quality poly sulphide ditto.

m

8

Carried to Collection

R

Bill No. 5
BILL NO.5 : WATERPROOFING

**UPGRADING AND RENOVATIONS OF EXISTING FACILITIES
AT UNISA SOLOMON MAHLANGU BUILDING, PRETORIA, 0002
TENDER BILL OF QUANTITIES**

SECTION 1 : BUILDING WORKS

BILL NO.5 : WATERPROOFING

COLLECTION

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Bill No. 5

BILL NO.5 : WATERPROOFING

R

**UPGRADING AND RENOVATIONS OF EXISTING FACILITIES
AT UNISA SOLOMON MAHLANGU BUILDING, PRETORIA, 0002
TENDER BILL OF QUANTITIES**

Item No	Quantity	Rate	Amount
<u>SECTION No. 1 - BUILDING WORKS</u>			
<u>BILL NO. 6</u>			
<u>ROOF COVERINGS, ETC.</u>			
<u>PREAMBLES</u>			
For preambles see "Model Preambles for Trades".			
<u>SUPPLEMENTARY PREAMBLES</u>			
<u>Preambles</u>			
The Standard Preambles and the Notes in the various trade bills are to, and do, apply equally to this section			
<u>Proprietary Products In Descriptions</u>			
Proprietary products shall be used as specified. Substitute products of similar quality and specification may only be used with prior approval by the Principal Agent			
<u>Fixing</u>			
Fixing shall be done according to SABS 1200HB with minimum 150mm end laps where roof pitch exceeds 15 degree and 250mm for other roof pitches			
<u>Guarantee</u>			
All roof coverings and side cladding are to be installed to comply with SABS Code of Practice 0237 where applicable. All roof sheeting shall be laid under a 5 year guarantee for site workmanship and water tightness			
<u>PROFIED SHEETING OF METAL, FIBRE-CEMENT, PLASTICS, ETC.</u>			
Carried to Collection			R
Bill No. 6 BILL NO.6 : ROOF COVERINGS			

**UPGRADING AND RENOVATIONS OF EXISTING FACILITIES
AT UNISA SOLOMON MAHLANGU BUILDING, PRETORIA, 0002
TENDER BILL OF QUANTITIES**

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**UPGRADING AND RENOVATIONS OF EXISTING FACILITIES
AT UNISA SOLOMON MAHLANGU BUILDING, PRETORIA, 0002
TENDER BILL OF QUANTITIES**

SECTION 1 : BUILDING WORKS

BILL NO.6 : ROOF COVERINGS

COLLECTION

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Bill No. 6

BILL NO.6 : ROOF COVERINGS

R

**UPGRADING AND RENOVATIONS OF EXISTING FACILITIES
AT UNISA SOLOMON MAHLANGU BUILDING, PRETORIA, 0002
TENDER BILL OF QUANTITIES**

Item No		Unit	Quantity	Rate	Amount
	<u>SECTION No. 1 - BUILDING WORKS</u>				
	<u>BILL NO. 7</u>				
	<u>MASONRY</u>				
	<u>PREAMBLES</u>				
	For preambles see "Model Preambles for Trades".				
	<u>SUPPLEMENTARY PREAMBLES</u>				
	<u>Preambles</u>				
	The Standard Preambles and the notes in the various trade bills are to, and do, apply equally to this section.				
	<u>Proprietary Products in Descriptions</u>				
	Proprietary products shall be used as specified. Substitute products of similar quality and specification may only be used with prior approval by the Principal Agent.				
	<u>Sizes in descriptions</u>				
	Where sizes in descriptions are given in brick units, "one brick" shall represent the length and "half brick" the width of a brick				
	<u>Cement mortar</u>				
	Unless otherwise described, all brickwork shall be built in 1:6 cement mortar.				
	<u>Face brick</u>				
	Bricks shall be ordered timeously to obtain uniformity in sizes and colour.				
	<u>Pointing</u>				
	Descriptions of recessed pointing to fair face brickwork and face brickwork shall be deemed to include square recessed, hollow recessed, weathered pointing, etc.				
	Carried to Collection			R	
	Bill No. 7 BILL NO.7 : MASONRY				

**UPGRADING AND RENOVATIONS OF EXISTING FACILITIES
AT UNISA SOLOMON MAHLANGU BUILDING, PRETORIA, 0002
TENDER BILL OF QUANTITIES**

<u>Samples, etc</u>				
Rates for brickwork, faced brickwork, etc shall include for all required samples.				
<u>FOUNDATIONS (PROVISIONAL)</u>				
<u>Brickwork of NFP bricks in class II mortar</u>				
1	Half brick walls	m2	46	
2	One brick walls	m2	96	
<u>Brickwork reinforcement</u>				
3	75mm Wide reinforcement built in horizontally	m	544	
4	150mm Wide reinforcement built in horizontally	m	1,133	
<u>SUPERSTRUCTURE</u>				
<u>Brickwork of NFP bricks in class II mortar</u>				
5	Half brick wall.	m2	120	
6	One brick walls.	m2	271	
<u>Brick Reinforcement</u>				
7	75mm Wide reinforcement built in horizontally	m	472	
8	150mm Wide reinforcement built in horizontally.	m	1,061	
<u>Precast Prestressed Vibrated Cement Concrete (30MPa) Lintols Including Moulds, Reinforcement, Propping, Etc</u>				
9	Lintol 110mm wide x 75mm deep in lengths not exceeding 3000mm.	m	9	
Carried to Collection				
Bill No. 7				
BILL NO.7 : MASONRY				

**UPGRADING AND RENOVATIONS OF EXISTING FACILITIES
AT UNISA SOLOMON MAHLANGU BUILDING, PRETORIA, 0002
TENDER BILL OF QUANTITIES**

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UPGRADING AND RENOVATIONS OF EXISTING FACILITIES
AT UNISA SOLOMON MAHLANGU BUILDING, PRETORIA, 0002
TENDER BILL OF QUANTITIES

Item No		Unit	Quantity	Rate	Amount
	<u>SECTION No. 1 - BUILDING WORKS</u>				
	<u>BILL NO. 8</u>				
	<u>CARPENTRY & JOINERY</u>				
	<u>PREAMBLES</u>				
	For preambles see "Model Preambles for Trades".				
	<u>SUPPLEMENTARY PREAMBLES</u>				
	<u>Preambles</u>				
	The Standard Preambles and the Notes in the various trade bills are to, and do, apply equally to this section.				
	<u>Proprietary Products In Descriptions</u>				
	Proprietary products shall be used as specified. Substitute products of similar quality and specification may only be used with prior approval by the Principal Agent				
	<u>Joinery</u>				
	Descriptions of frames shall be deemed to include frames, transoms, mullions, rails, etc				
	Descriptions of hardwood joinery shall be deemed to include pelleting of bolt holes				
	<u>Fixing</u>				
	Items described as "nailed" shall be deemed to be fixed with hardened steel nails or shot pins to brickwork or concrete				
	<u>SKIRTINGS</u>				
	<u>"Supawood"</u>				
1	19 x 76mm Bullnosed skirting plugged to wall.	m	1,315		
	<u>DOORS, ETC</u>				
	Carried to Collection				
	Bill No. 8				
	BILL NO.8 : CARPENTRY AND JOINERY				

UPGRADING AND RENOVATIONS OF EXISTING FACILITIES
AT UNISA SOLOMON MAHLANGU BUILDING, PRETORIA, 0002
TENDER BILL OF QUANTITIES

Semi-solid flush doors with 12mm hardwood
concealed edges and masonite finish suitable for
painting, hung to steel door frames (frames
measured elsewhere)

1	Door size overall 813 x 2032mm high.	No	26
2	Door size overall 900 x 2032mm high.	No	18
3	Door size overall 1600 x 2032mm high.	No	19

Carried to Collection

R

Bill No. 8
BILL NO.8 : CARPENTRY AND JOINERY

**UPGRADING AND RENOVATIONS OF EXISTING FACILITIES
AT UNISA SOLOMON MAHLANGU BUILDING, PRETORIA, 0002
TENDER BILL OF QUANTITIES**

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**UPGRADING AND RENOVATIONS OF EXISTING FACILITIES
AT UNISA SOLOMON MAHLANGU BUILDING, PRETORIA, 0002
TENDER BILL OF QUANTITIES**

Item No		Unit	Quantity	Rate	Amount
	<u>SECTION No. 1 - BUILDING WORKS</u>				
	<u>BILL NO. 9</u>				
	<u>CEILINGS PARTITIONS AND ACCESS FLOORING</u>				
	<u>PREAMBLES</u>				
	For preambles see "Model Preambles for Trades"				
	<u>SUPPLEMENTARY PREAMBLES</u>				
	<u>Descriptions</u>				
	Items described as "nailed" shall be deemed to be fixed with hardened steel nails or pins or shot pinned to brickwork or concrete				
	Items described as "plugged" shall be deemed to include screwing to fibre, plastic or metal plugs at not exceeding 600mm centres, and where described as "bolted", the bolts are measured elsewhere				
	<u>Proprietary suspended ceilings</u>				
	Electric light fittings, diffusers, panels, etc generally are "lay in" units of the same dimensions as the suspension grid described and allowance shall be made accordingly for their support, inclusive of any flexibility in setting out that may be required (ceiling panels have not been deducted and pricing shall take cognisance thereof)				
	<u>CEILINGS</u>				
	<u>SUSPENDED CEILINGS</u>				
	<u>Pre-Painted 600 x 1200 x 12,5mm BPB Gypsum donnCeil wet felted acoustic sand micro fibre reinforced gypsum panels on Donn SQ/T37 lay-in galvanised steel tee suspension system including main and cross tees, necessary hangers, grids, etc, installed strictly according to manufacturer's specification</u>				
1	Suspended not exceeding 1m below concrete roof	m2	4,933		
	Carried to Collection			R	
	Bill No. 9				
	BILL NO.9 : CEILINGS, PARTITIONS, ETC				

**UPGRADING AND RENOVATIONS OF EXISTING FACILITIES
AT UNISA SOLOMON MAHLANGU BUILDING, PRETORIA, 0002
TENDER BILL OF QUANTITIES**

	<u>9,5mm "Rhino" gypsum plasterboard with 63mm wide strips of mesh scrim nailed over joints and the joints finished with gypsum skim plaster trowelled to a smooth finish to the thickness recommended by the manufacturer including framework sufficient to hang ceilings fixed to roof trusses or steel purlins to</u>				
1	Suspended not exceeding 1m below concrete roof.	m2	2,201		
	<u>SHOPFITTED WOOD CEILING</u> <u>Shopfitted wood ceiling colour: Light oak to match Oggie, Legno Rustic natural colour or similar approved</u>				
2	Ceilings suspended not exceeding 1m below concrete slab.	m2	73		
	<u>INSULATION</u> <u>Ceiling Insulation</u>				
3	100mm Thick mineral wool insulation laid on top of suspended ceiling as per SANS204.	m2	2,101		
	<u>SUNDRIES</u>				
4	Extra over ceiling for forming 600 x 600mm opening for recessed fluorescent luminaire.	No	57		
5	Extra over ceiling for forming 1200 x 600mm opening recessed fluorescent luminaire.	No	627		
6	Extra over ceilings for opening for 150mm diameter light fitting.	No	187		
7	Extra over ceilings for opening for motion sensors.	No	276		
	<u>PARTITIONING</u>				
	<u>GYPSUM BOARD DRY WALL PARTITION SYSTEM</u>				
	Carried to Collection			R	
	Bill No. 9 BILL NO.9 : CEILINGS, PARTITIONS, ETC				

UPGRADING AND RENOVATIONS OF EXISTING FACILITIES
AT UNISA SOLOMON MAHLANGU BUILDING, PRETORIA, 0002
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Approved partition system comprising recessed head section top track, recessed base section bottom track including z-section supports and verticals studs at approximately 600mm centres including additional studs where necessary at abutments, ends, reveals, standard skirting, etc., covered with and including 15mm thick wall board on both sides, screwed to studding with dry-wall screws at 220mm centres. Joints are to be scrimmed over with 63mm wide strips of mesh and finished with skimmed plaster trowelled to a smooth surface to the thickness recommended by the manufacturer. Intersections and abutments are measured separately and descriptions shall be deemed to include any additional studs, corner beads, etc

1	115mm Thick partitioning, 595mm high with bottom and top tracks installed above half brick wall of internal division walls up to underside of existing concrete slab.	m	748
2	Extra over partition 595mm high for vertical abutment.	No	180
3	Extra over partition 595mm high for T-intersection.	No	24

CORNICES

"Donn" cornices to suspended ceilings

4	50mm Shadowline wall angle trim, plugged.	m	5,256
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Carried to Collection

R

Bill No. 9
BILL NO.9 : CEILINGS, PARTITIONS, ETC

**UPGRADING AND RENOVATIONS OF EXISTING FACILITIES
AT UNISA SOLOMON MAHLANGU BUILDING, PRETORIA, 0002
TENDER BILL OF QUANTITIES**

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**UPGRADING AND RENOVATIONS OF EXISTING FACILITIES
AT UNISA SOLOMON MAHLANGU BUILDING, PRETORIA, 0002
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Item No	Quantity	Rate	Amount
<u>SECTION No. 1 - BUILDING WORKS</u>			
<u>BILL NO. 10</u>			
<u>FLOOR COVERINGS, WALL LININGS, ETC</u>			
<u>PREAMBLES</u>			
For preambles see "Model Preambles for Trades			
<u>SUPPLEMENTARY PREAMBLES</u>			
<u>Preambles</u>			
The Standard Preambles and the Notes in the various trade bills are to, and do, apply equally to this section.			
<u>Cleaning</u>			
Rates for floor covering shall include for cleaning on completion			
<u>Colours</u>			
All materials shall be in colours to be selected by the Principal Agent and, where applicable, laid to approved patterns			
<u>FLOOR COVERINGS</u>			
Carried to Collection		R	
Bill No. 10 BILL NO.10 : FLOOR COVERINGS, PLASTIC LININGS,			

UPGRADING AND RENOVATIONS OF EXISTING FACILITIES
AT UNISA SOLOMON MAHLANGU BUILDING, PRETORIA, 0002
TENDER BILL OF QUANTITIES

1212 x 171mm Heavy duty fully flexible non-directional vinyl floor sheeting, code: LWC-8517 (valid BBA agreement certificate) of homogenous and monolayer construction with and including polyurethane reinforced coating (weight - 3.03kg/m2) fixed with an approved acrylic adhesive and joints hot air seal welded and glazed with a fully flexible coloured welding rod to provide a continuous finished surface including rolling with a 68kg three part metal roller on completion, installed in strict accordance with the manufacturer's instructions on plaster bedding (bedding elsewhere)

1	On floors.	m2	2,742	
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DIVIDING STRIPS, ETC

2	3 x 40mm Brass dividing strips to detail between different floor finishes	m	525	
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POLISH, SEALERS, ETC

Clean linoleum thoroughly with water and neutral detergent, rinse, dry out and apply two coats of waterbased floor dressing to comply with SABS 1042

3	On floors	m2	2,742	
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Carried to Collection

R

Bill No. 10
BILL NO.10 : FLOOR COVERINGS, PLASTIC LININGS,

**UPGRADING AND RENOVATIONS OF EXISTING FACILITIES
AT UNISA SOLOMON MAHLANGU BUILDING, PRETORIA, 0002
TENDER BILL OF QUANTITIES**

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BILL NO.10 : FLOOR COVERINGS, PLASTIC LININGS,		

**UPGRADING AND RENOVATIONS OF EXISTING FACILITIES
AT UNISA SOLOMON MAHLANGU BUILDING, PRETORIA, 0002
TENDER BILL OF QUANTITIES**

Item No		Unit	Quantity	Rate	Amount
	<u>SECTION No. 1 - BUILDING WORKS</u>				
	<u>BILL NO. 11</u>				
	<u>IRONMONGERY</u>				
	<u>PREAMBLES</u>				
	For preambles see "Model Preambles for Trades".				
	<u>SUPPLEMENTARY PREAMBLES</u>				
	<u>Finishes to ironmongery</u>				
	Where applicable finishes to ironmongery are indicated by suffixes in accordance with the following list: BS Satin bronze lacquered CH Chromium plated SC Satin chromium plated SE Silver enamelled GE Grey enamelled AS Anodised silver AB Anodised bronze AG Anodised gold ABL Anodised black PB Polished brass PL Polished and lacquered PT Epoxy coated SD Sanded				
	<u>ALLOW FOR THE INSTALLATION OF THE FOLLOWING IRONMONGERY ITEMS:</u>				
	<u>Locks</u>				
1	Cylinder Lockset (DCLSA)	No	18		
2	Bathroom/WC Stainless steel deadlock CODE: D032D.	No	6		
3	Stainless steel multiple lever deadlock CODE: D033D.	No	4		
	<u>Handles</u>				
4	Aluminium pull handle (DCLSA)	Pairs	18		
5	Straight stainless steel tubular pull handle with flange CODE: DPH-301B.	No	3		
	<u>Hinges, Bolts, Etc</u>				
6	Bathroom/WC stainless steel indicator set CODE: DWC-006.	No	37		
	Carried to Collection			R	
	Bill No. 11				
	BILL NO.11 : IRONMONGERY				

**UPGRADING AND RENOVATIONS OF EXISTING FACILITIES
AT UNISA SOLOMON MAHLANGU BUILDING, PRETORIA, 0002
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Push Plates, Kicking Plates, Nameplates, Etc

1	150x150mm paraplegic stainless steel CODE: DSS - 133.	No	2
2	Stainless steel push plate 150 x 150mm with keyhole piercing CODE: 730/66.	No	8
3	150 x 150mm MALE/FEMALE sign- stainless steel code DDS-130.	No	7
4	900 x 300 x 1200mm Wide stainless steel kick plate.	No	6

Stops, Holders, Hooks, Etc

5	Floor fixed door stop - nickel plated CODE: DDS-NP-018.	No	9
6	Hat and coat hook with rubber buffer code DDH-SS-031-B.	No	2

DOOR CLOSERS

"NHN" or equal approved

7	Overhead silver door closer with regular arm CODE: TS71.	No	9
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BATHROOM FITTINGS

8	32mm Diameter CNTX 700A stainless steel side grab rail plugged to wall.	No	2
9	32mm Diameter CNTX 550 stainless steel side grab rail plugged to wall.	No	2
10	3 Roll toilet roll dispenser with lockable padlock at the top supplied by "Volkem" or similar approved colour: Stainless Steel CODE: TR003-SS.	No	8
11	Hygiene dispenser supplied by "Volkem" or similar approved colour: Stainless Steel CODE: HBD004.	No	8

Carried to Collection

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Bill No. 11
BILL NO.11 : IRONMONGERY

**UPGRADING AND RENOVATIONS OF EXISTING FACILITIES
AT UNISA SOLOMON MAHLANGU BUILDING, PRETORIA, 0002
TENDER BILL OF QUANTITIES**

1	500ml Polypropylene plastic manual/push spray foam toilet seat sanitiser supplied by "Volkem" or similar approved colour: Satin Silver CODE: SD009SI.	No	4
2	500ml Polypropylene plastic manual/push spray hand soap dispenser supplied by "Volkem" or similar approved colour: Satin Silver CODE: SD009SI.	No	4
3	400ml Polypropylene plastic digital air freshener supplied by "Volkem" or similar approved colour: Satin Silver CODE: AF002.	No	4
<u>COVER STRIPS, ETC</u>			
4	6 x 50mm Aluminium flat coverstrips over joints.	m	10
		R	
Carried to Collection			
Bill No. 11 BILL NO.11 : IRONMONGERY			

**UPGRADING AND RENOVATIONS OF EXISTING FACILITIES
AT UNISA SOLOMON MAHLANGU BUILDING, PRETORIA, 0002
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SECTION 1 : BUILDING WORKS

BILL NO.11 : IRONMONGERY

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Bill No. 11

BILL NO.11 : IRONMONGERY

UPGRADING AND RENOVATIONS OF EXISTING FACILITIES
AT UNISA SOLOMON MAHLANGU BUILDING, PRETORIA, 0002
TENDER BILL OF QUANTITIES

Item No		Unit	Quantity	Rate	Amount
	<u>BILL NO. 12</u>				
	<u>SECTION No. 1 - BUILDING WORKS</u>				
	<u>METALWORK</u>				
	<u>PREAMBLES</u>				
	For preambles see "Model Preambles for Trades".				
	<u>SUPPLEMENTARY PREAMBLES</u>				
	<u>Preambles</u>				
	The Standard Preambles and the notes in the various trade bills are to, and do, apply equally to this section.				
	<u>PRIMED PRESSED STEEL DOOR FRAMES</u>				
	<u>1,2mm Thick double rebated frame for half brick wall complete with butts, etc and including setting up, building in, filling back of frame with cement mortar, etc</u>				
1	Frame for door size 813 x 2032mm.	No	9		
2	Frame for door size 900 x 2032mm.	No	3		
	<u>1,2mm Thick double rebated frame for one brick wall complete with butts, etc and including setting up, building in, filling back of frame with cement mortar, etc</u>				
3	Frame for door size 813 x 2032mm.	No	4		
4	Frame for door size 1600 x 2032mm.	No	4		
	<u>ALUMINIUM WINDOWS, ETC.</u>				
5	Window type W02 size 600 x 600mm high.	No	43		
6	Window type W04 size 1200 x 1200mm high.	No	3		
7	Window type W05 size 600 x 600mm high.	No	7		
	Carried to Collection			R	
	Bill No. 12				
	BILL NO.12 : METALWORK				

UPGRADING AND RENOVATIONS OF EXISTING FACILITIES
AT UNISA SOLOMON MAHLANGU BUILDING, PRETORIA, 0002
TENDER BILL OF QUANTITIES

<u>FENCING</u>					
<u>Hot Dipped Galvanised After Fabrication Mild Steel Welded Screens And Gates With Frames, Mitred Intersections, Ironmongery, Etc And Fixed Complete All As Attached Drawings</u>					
1	3mm diameter Clearvu mesh panel (or similar approved) 3305mm wide x 2400mm high, with aperture size (centres) at 76.2mm x 12.7mm. Panel reinforced with 4 x 50mm deep "V" formation horizontal recessed bands (Rigidity), 2 x 75mm 70 degree flanges along sides (<i>internal fixtures- anti vandal, allowing for flush post panel and panel finish, 48 line wire secure connection, locking recess mechanism</i>) and 1 x 90 degrees flange along top and 1 x 30 degree flange along toe. (arrow - straight edges integrated angkor) mesh galvanised the marine fusion bond coated.	m	83		
2	300mm clearvu or similar approved anti-burrow coating mesh (Underdig), complete.	m	83		
3	Cochrane shark tooth spike, 2mm thick toughened steel fixed to the mesh.	m	83		
4	3000mm high Cochrane tape locking post 85 x 45 x 85mm, sealed with UV stabilized polymer cap including 8 x single and 8 x double bolt comb clamp and embedded in and including 400 x 400 x 600mm mass concrete (15 MPa) all complete with excavations, filling, etc.	No	20		
5	Single pedestrian gate size 1270 x 1800mm high formed of 3mm diameter clearvu or similar approved mesh, post, hinges, etc.	No	1		
Carried to Collection				R	
Bill No. 12 BILL NO.12 : METALWORK					

**UPGRADING AND RENOVATIONS OF EXISTING FACILITIES
AT UNISA SOLOMON MAHLANGU BUILDING, PRETORIA, 0002
TENDER BILL OF QUANTITIES**

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**UPGRADING AND RENOVATIONS OF EXISTING FACILITIES
AT UNISA SOLOMON MAHLANGU BUILDING, PRETORIA, 0002
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Item No		Unit	Quantity	Rate	Amount
	<u>SECTION No. 1 - BUILDING WORKS</u>				
	<u>BILL NO. 13</u>				
	<u>PLASTERING</u>				
	<u>PREAMBLES</u>				
	For preambles see "Model Preambles for Trades".				
	<u>SUPPLEMENTARY PREAMBLES</u>				
	<u>Preambles</u>				
	The Standard Preambles and the Notes in the various trade bills are to, and do, apply equally to this section.				
	<u>Screeds on concrete</u>				
1	25mm Thick on floors.	m2	1,693		
	<u>INTERNAL PLASTER</u>				
	<u>One coat cement plaster minimum 15mm thick (4:1) finished smooth with a steel float on brickwork</u>				
2	On walls.	m2	674		
3	In narrow widths.	m2	79		
	<u>RHINOLITE PLASTER</u>				
	<u>3mm Thick Rhinolite plaster on brickwork</u>				
4	Walls.	m2	44		
	<u>EXTERNAL PLASTER</u>				
	<u>Two coats cement plaster minimum 30mm thick (5:1) steel floated including all labours on</u>				
5	Brick vertical surfaces.	m2	359		
6	In narrow widths.	m2	39		
	Carried Forward to Summary of Section No. 1			R	
	Bill No. 13				
	BILL NO.13 : PLASTERING				

**UPGRADING AND RENOVATIONS OF EXISTING FACILITIES
AT UNISA SOLOMON MAHLANGU BUILDING, PRETORIA, 0002
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Item No	Unit	Quantity	Rate	Amount
<u>SECTION No. 1 - BUILDING WORKS</u>				
<u>BILL NO. 14</u>				
<u>TILING</u>				
<u>PREAMBLES</u>				
For preambles see "Model Preambles for Trades".				
<u>SUPPLEMENTARY PREAMBLES</u>				
<u>Preambles</u>				
The Standard Preambles and the Notes in the various trade bills are to, and do, apply equally to this section.				
<u>Proprietary Products In Descriptions</u>				
Proprietary products shall be used as specified. Substitute products of similar quality and specification may only be used with prior approval by the Principal Agent				
<u>Fixing</u>				
Unless described as "fixed with adhesive to plaster (plaster elsewhere)" descriptions of tiling on brick or concrete walls, columns, etc shall be deemed to include 1:4 cement plaster backing and descriptions of tiling on concrete floors etc shall be deemed to include 1:3 plaster bedding				
Tiling described as "fixed with adhesive on power floated concrete" shall be deemed to include for approved tiling key-coat				
All tiling is to be fixed with approved adhesive unless otherwise described to screeded or plastered surfaces which are elsewhere measured. All jointing is to be done with an approved grout unless otherwise described.				
Carried to Collection				R
Bill No. 14 BILL NO.14 : TILING				

UPGRADING AND RENOVATIONS OF EXISTING FACILITIES
AT UNISA SOLOMON MAHLANGU BUILDING, PRETORIA, 0002
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Ceramic, porcelain, marble and granite tiles are to be fixed and grouted with suitable adhesives and grouts from the "Tal Professional" ("Ceresit Tylon"?) range of products as recommended by the manufacturer of the tiles

WALL TILING

300 x 600 Porcelain wall tiles PC amount R300/m2, colour fixed with adhesive and jointed and pointed with flush joints in grout on plaster (Plaster elsewhere measured)

1	On walls.	m2	436
2	On narrow widths.	m2	61

FLOOR TILING

300 x 600 Porcelain floor tiles PC amount R300/m2, colour fixed with adhesive and jointed and pointed with flush joints in grout on plaster (Plaster elsewhere measured)

3	On floors.	m2	380
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Sundries

4	10mm Thick stainless steel corner trim	m	60
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Carried to Collection

R

Bill No. 14
BILL NO.14 : TILING

**UPGRADING AND RENOVATIONS OF EXISTING FACILITIES
AT UNISA SOLOMON MAHLANGU BUILDING, PRETORIA, 0002
TENDER BILL OF QUANTITIES**

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BILL NO.14 : TILING		
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BILL NO.14 : TILING		

**UPGRADING AND RENOVATIONS OF EXISTING FACILITIES
AT UNISA SOLOMON MAHLANGU BUILDING, PRETORIA, 0002
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Item No		Unit	Quantity	Rate	Amount
	<u>SECTION No. 1 - BUILDING WORKS</u>				
	<u>BILL No. 15</u>				
	<u>PLUMBING & DRAINAGE (PROVISIONAL)</u>				
	<u>SUPPLEMENTARY PREAMBLES</u>				
	For preambles see "Model Preambles for Trades".				
	<u>SUPPLEMENTARY PREAMBLES</u>				
	<u>"Polycop" Polypropylene Pipes:</u>				
	Polypropylene pipes 54mm diameter and under shall be seamless copper coloured class 16 pipes jointed with "Fast-fuse" heat welded thermoplastic or brass compression fittings as designed for use with copper pipes as stated				
	Pipes shall be firmly fixed to walls etc with coloured nylon snap-in pipe clips with provision for accommodating thermal movement and jointed and fixed strictly in accordance with the manufacturer's instructions				
	All pipe diameters are nominal external				
	<u>"Polylink" Polypropylene Pipes:</u>				
	Polypropylene pipes 63mm diameter and over shall be class 12 pipes jointed with cast iron "Supraclamp" running joints				
	Fusion welded bends, once or twice mitred as necessary, and tees shall be factory manufactured				
	Fusion welded bends and tees shall include jointing to pipes with PVC rubber ring double Z joint couplers				
	Branch tees shall include flanged and bolted joints to "Polycop" branch pipes in addition and for brass compression male iron to copper straight couplers				
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**UPGRADING AND RENOVATIONS OF EXISTING FACILITIES
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Reducers shall include jointing to pipes with PVC rubber ring double Z joint couplers and reducers shall be of sufficient overall length to accommodate same

All pipes shall be jointed and fixed strictly in accordance with the manufacturer's instructions

All pipe diameters are nominal external

Concrete Pipes:

Pipes shall be jointed with ogee joints with rubber collars or socket and spigot joints with rubber rings

Vitrified Clay Pipes:

Pipes shall rest on solid ground and, where necessary, pockets of sufficient size shall be cut around joints to enable the jointing to be properly performed or, alternatively, pipes shall be bedded full length on and including unreinforced concrete laid in a semi-dry state immediately before pipes are laid

Sewer and drainage pipes and fittings shall be jointed and sealed with butyl rubber rings

uPVC Pipes and Fittings:

Soil, waste and vent pipes and fittings shall be solvent weld jointed

uPVC Pressure Pipes and Fittings:

Pipes for water supply shall be of the class stated

Pipes of 40mm diameter and smaller shall be plain ended with solvent welded uPVC loose sockets and fittings

Pipes of 50mm diameter and greater shall have sockets and spigots with push in type integral rubber ring joints. Bends shall be uPVC and all other fittings shall be cast iron, all with similar push-in type joints

High density polyethylene (HDPE) pipes and fittings

Pipes shall be type IV and of the class specified with "Plasson" or "Alprene" compression fittings

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Copper Pipes:

Pipes shall be hard drawn and half-hard pipes of the class stated. Class 0 (thin walled hard drawn) pipes shall not be bent. Class 1 (thin walled half-hard), class 2 (half-hard) and class 3 (heavy walled half-hard) pipes shall only be bent with benders with inner and outer formers. Fittings to copper waste, vent and anti-syphon pipes, capillary solder fittings and compression fittings shall be "Cobra Watertech" type. Capillary solder fittings shall comply with ISO 2016. Only compression fittings shall be used in walls or in ground

Fixing of Pipes

Unless specifically otherwise stated, descriptions of pipes shall be deemed to include fixing to walls etc, casting in, building in or suspending not exceeding 1m below suspension level

Lead Pipes and Fittings

All soldered joints shall be wiped and brass unions shall be used for jointing lead to steel

Reducing Fittings

Where fittings have reducing ends or branches they are described as "reducing". In the case of pipes with diameters not exceeding 60mm only the largest end or branch size is given. Should the contractor wish to use other fittings and bushes or reducers he may do so on the understanding that no claim in this regard will be entertained. In the case of pipes with diameters exceeding 60mm all sizes are given and no claim for extra bushes, reducers, etc will be entertained

Wire Gratings

Descriptions of gutter outlets etc shall be deemed to include wire balloon gratings

Septic Tanks

Descriptions of septic tanks shall be deemed to include excavation, bedding and jointing, concrete base slabs, jointing to drains and backfilling, compaction, etc all in accordance with the manufacturer's instructions

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Exposed Concrete Surfaces

Exposed surfaces of concrete stormwater channels, cover slabs, inspection eye marker slabs, gully tops, cleaning eye tops, catchpits, inspection chambers, etc shall be finished smooth with plaster

Excavations

No claim for rock excavation will be entertained unless the contractor has timeously notified the quantity surveyor thereof prior to backfilling

"Soft rock" and "hard rock" shall be as defined in "Earthworks"

Laying, Backfilling, Bedding, Etc. Of Pipes

Pipes shall be laid and bedded and trenches shall be carefully backfilled in accordance with manufacturers' instructions

Where no manufacturers' instructions exist pipes shall be laid in accordance with clauses 5.1 and 5.2 of each of the following: SABS 1200 L : Medium-pressure pipelines LD : Sewers LE : Stormwater drainage Pipe trenches etc shall be backfilled in accordance with clauses 3, 5.5, 5.6, 5.7 and 7 of SABS 1200 DB : Earthworks (Pipe trenches) Pipes shall be bedded in accordance with clauses 3.1 to 3.4.1, 5.1 to 5.3 and 7 of SABS 1200 LB : Bedding (Pipes). Unless otherwise described bedding of rigid pipes shall be class B bedding

Flush Pans

Flush pans shall have straight or side outlets and "P" or "S" traps as necessary

Stainless Steelbasins, Sinks, Wash Troughs, Urinals, Etc.

Units shall have standard aprons on all exposed edges and tiling keys against walls where applicable

Waste Unions

Descriptions of waste unions shall be deemed to include rubber or vulcanite plugs and chains fixed to fittings

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**UPGRADING AND RENOVATIONS OF EXISTING FACILITIES
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Steel Sectional Water Tanks

Tanks shall comply with SABS CKS 114

**"Densyl" Petrolatum Anti-Corrosion Tape As
Manufactured By Denso SA (Pty) Ltd.**

Pipes to be taped shall be coated with the appropriate primer and the tape shall be applied with minimum 15mm lap per spiral unless otherwise described

Couplings and fittings to pipes shall be taped in strict accordance with the manufacturer's instructions including all mastic, tape, "Layflat" sheeting, securing of same, etc

SANITARY PLUMBING

**Rigid PVC Socketed Soil, Waste Or Vent Piping
(SABS 967)**

1	40mm Pipe and fixing to walls, falls, in concrete, etc.	m	101
2	110mm Ditto.	m	225
<u>Extra For</u>			
3	40mm Vent cowl.	No	2
4	110mm Vent cowl.	No	1
5	50mm "GI Two-Way" vent valve.	No	2
6	110mm "GI Two-Way" vent valve.	No	3
7	50mm Reducer.	No	12
8	110mm Eccentric reducer.	No	1
9	40mm Bend.	No	15
10	110mm Bend.	No	12
11	40mm Access bend.	No	9
12	110mm Access bend.	No	9
13	40mm Junction.	No	17

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1	110mm Junction.	No	8	
2	40mm Access junction.	No	11	
3	110mm Reducing access junction.	No	3	
4	110mm Double junction.	No	5	
5	110 x 40mm Boss connector.	No	5	
6	110mm Pan collar and joint to outlet of W.C. pan.	No	5	
	<u>Butyl Rubber</u>			
7	40mm Flexitrap plain bathtrap and overflow combination including joints to bath outlet, overflow and end of pipe.	No	3	
	NOTE: All fittings butting up against wall or floor finishes are to be sealed with an approved silicone sealer to the Architects satisfaction. -----			
	<u>White Glazed Vitreous China Fittings Including Assembling And Fixing In Position, Expanding Bolts And Mortices In Brick Or Concrete Walls, Connecting Up, Etc. (Tap And Mixer Set Reference Numbers Are Those Of Cobra Brassware)</u>			
8	Vaal 7026 Lotus basin, size 635 x 485mm overall, fixed to wall with 10mm diameter bolts (8448ZO) and hanger mechanism and fitted with chromium plated basin set.	No	4	
9	WC SUITE:Vaal Potteries vitreous china "Orchid" with close-coupled 90 degrees outlet open run wash-down pan (Code:772600) and matching 9-litre cistern (Code: 710531) complete with lid and fitments, Colour - White.Complete all plumbing connections, test flush and ensure that correct water level has been set and that operating overflow tube height confirms and operates according to local by-laws and S.A.B.S. specifications, Colour - white. Supply and install to each water closet 1x Cobra (Measured elsewhere Watertech half-inch full way Chrome plated Ballcock stop valve. Including white solid timber toilet seat.	No	3	
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<p>1 WC Suite Disabled: Vaal Potteries vitreous China 'Protea' Paraplegic 90degrees outlet pan code 7502. Colour white Installation as per manufacturers instructions. With Vaal Potteries: Machine 9 litre cistern: code 710 536, complete with lid fitment and purpose made C.P side flush level. Mounted on wall adjacent to cistern. Bottom inlet water supply must be on same side as flush level. All flushing mechanism levers to be for paraplegic toilets. Cobra 232/350 (Measured elsewhere) angle regulating valve with 350 service connection C.P.</p> <p><u>TESTING</u></p> <p>2 Allow for testing all drains, sanitary plumbing and water supplies to the satisfaction of the Architect and to Municipal requirements and issue COC. All defective work is to be taken out and replaced at the Contractor's expense</p> <div style="text-align: right;">Carried to Collection</div> <p>Bill No. 15 BILL NO.15 : PLUMBING & DRAINAGE</p>		No	1	Item	R
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**UPGRADING AND RENOVATIONS OF EXISTING FACILITIES
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Item No	Unit	Quantity	Rate	Amount
<u>SECTION No. 1 - BUILDING WORKS</u>				
<u>BILL NO. 17</u>				
<u>PAINTWORK</u>				
<u>PREAMBLES</u>				
For preambles see "Model Preambles for Trades".				
<u>SUPPLEMENTARY PREAMBLES</u>				
Descriptions of paintwork shall be deemed to include for all cutting in				
<u>PREPARATORY WORK TO EXISTING WORK</u>				
Previously painted plastered surfaces: Surfaces shall be thoroughly washed down and allowed to dry completely before any paint is applied. Blistered or peeling paint shall be completely removed and cracks shall be opened, filled with a suitable filler and finished smooth				
Previously painted metal surfaces: Surfaces shall be thoroughly rubbed and cleaned down. Blistered or peeling paint shall be completely removed down to bare metal				
Previously painted wood surfaces: Surfaces shall be thoroughly cleaned down. Blistered or peeling paint shall be completely removed and cracks and crevices shall be primed, filled with suitable filler and finished smooth				
<u>PAINTWORK, ETC TO PREVIOUSLY PAINTED WORK</u>				
<u>PLASTERERD SURFACES WITH</u>				
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UPGRADING AND RENOVATIONS OF EXISTING FACILITIES
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	<u>Clean down and remove all loose and flaking paint, prepare previously PVA painted surfaces, stop and apply one coat plaster primer and two finishing coats 'Plascon Orchid Bay' code GR Y06 acrylic paint on</u>				
1	External walls.	m2	1,621		
	<u>Clean down and remove all loose and flaking paint, prepare previously PVA painted surfaces, stop and apply one coat plaster primer and two finishing coats 'Plascon Country Mushroom, code Y1-D2-2" low sheen acrylic paint on</u>				
2	Internal walls.	m2	4,942		
	<u>ON WOOD</u>				
	<u>Clean down and remove all loose and flaking paint, prepare previously PVA painted surfaces, stop and apply one coat universal undercoat and two coats plascon velvagio paint on</u>				
3	Doors.	m2	753		
4	On frames, skirtings, rails, etc not exceeding 300 mm girth.	m	2,205		
	<u>ON METAL</u>				
	<u>Prepare surfaces and remove all loose material, dust, grease, salts and contamination with degreaser, rinse and apply one undercoat and two coats matt egg-shell enamel paint on</u>				
5	Door frames.	m2	433		
	<u>PAINTWORK, ETC TO NEW WORK</u>				
	<u>PLASTERED SURFACES WITH</u>				
	<u>Apply one coat plaster primer and two finishing coats 'Plascon Country Mushroom, code Y1-D2-2" low sheen acrylic paint on</u>				
6	Internal walls.	m2	1,068		
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**UPGRADING AND RENOVATIONS OF EXISTING FACILITIES
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		UNIT	QUANTITY	AMOUNT
<u>Apply one coat plaster primer and two finishing coats 'Plascon Orchid Bay' code GR Y06 acrylic paint on</u>				
1	External walls.	m2	259	
<u>PLASTER BOARD SURFACES WITH</u>				
<u>Apply one acrylic undercoat and two finishing coats matt PVA paint on</u>				
2	Ceilings and bulkheads.	m2	2,184	
3	Gypsum skimmed plastered walls.	m2	1,078	
<u>ON WOOD</u>				
<u>One coat universal undercoat and two coats plascon velvagio paint on</u>				
4	Doors.	m2	39	
5	On frames, skirtings, rails, etc not exceeding 300 mm girth.	m	334	
<u>ON METAL</u>				
<u>Prepare surfaces and remove all loose material, dust, grease, salts and contamination with degreaser, rinse and apply one undercoat and two coats matt egg-shell enamel paint on</u>				
6	Door frames.	m2	16	
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**UPGRADING AND RENOVATIONS OF EXISTING FACILITIES
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<u>SECTION No. 1 - BUILDING WORKS</u>			
<u>BILL NO. 18</u>			
<u>PARKING</u>			
<u>PREAMBLES</u>			
For preambles see "Model Preambles for Trades".			
<u>SUPPLEMENTARY PREAMBLES</u>			
<u>Preambles</u>			
The Standard Preambles and the Notes in the various trade bills are to, and do, apply equally to this section.			
<u>EARTHWORKS</u>			
<u>Excavations, Filling, Etc</u>			
1	Excavate in earth to reduce levels under roads not exceeding 2000mm deep.	m3	11
2	Extra over all excavations for carting away from the site all surplus excavated material.	m3	11
3	Allow for keeping excavations free from water.	Item	
4	G7 gravel material, selected and supplied by the Contractor, deposited, watered and consolidated to 95% modified AASHTO density in 500mm thick sub-base course under roads.	m3	4
5	G10 gravel material, selected and supplied by the Contractor, deposited, watered and consolidated to 95% modified AASHTO density in 150mm thick sub-base course under roads.	m3	4
6	G2 gravel material, selected and supplied by the Contractor, deposited, watered and consolidated to 95% modified AASHTO density in 150mm thick sub-base course under roads.	m3	4
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**UPGRADING AND RENOVATIONS OF EXISTING FACILITIES
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1	Scarify, mix and consolidate top 150mm of subgrade to 93% modified AASHTO density.	m2	25		
2	Ant proofing treatment to surfaces of ground under floors, etc including forming, saturating with ant poisoning solution, filling and consolidating 75 x 75mm V-shaped grooves along face of walls.	m2	25		
<u>TESTING</u>					
<u>TESTSNOTE: Should the strength required for the concrete in any portion of the structure not be attained in the test cubes, or should any concrete whatsoever be defective the portion in question is to be demolished and replaced at the expense of the Contractor.-----</u>					
3	Provide and have filling compaction check tested by a Consulting Engineer's Laboratory and deliver the results to the Consultant within 24 hours of the tests being completed.	No	3		
<u>PRECAST CONCRETE(CPAP Work Group No. 112 Unless Otherwise Stated)</u>					
<u>Precast Cement Concrete (20MPa) Kerbs And Channels Finished Smooth From The Mould On Exposed Surfaces And Including Excavation, Backfilling, Etc</u>					
4	Fig. 8 kerb size 150 x 300mm high overall, laid in lengths not exceeding 1000mm on a well rammed earth bottom or base course, bedded on a 45mm thick x 300mm wide layer of 3.1 cement mortar with 100 x 100 x 200mm long triangular haunching behind kerb at all joints and jointed in 3.1 cement mortar.	m	12		
<u>WEARING COURSE</u>					
5	30mm asphalt wearing course (Mix D)	m2	25		
<u>PAINTWORK(CPAP Work Group No. 152 Unless Otherwise Stated)</u>					
<u>Prepare And Apply One Coat Road Marking Paint</u>					
6	Line 100mm wide on brick paving.	m	18		
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**UPGRADING AND RENOVATIONS OF EXISTING FACILITIES
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	<u>SECTION No. 2 - ELECTRICAL INSTALLATIONS</u>				
	<u>BILL NO. 1</u>				
	<u>GENERAL REQUIREMENTS</u>				
	<u>1.1 General requirements</u>				
1	1.1.1 Residence with Local Authority, submission of ECA registration & Regional Services Contribution			SUM	
	<u>1.2 Labelling</u>				
2	1.2.1 Engraved labels on each SSO and light switch face plate, glued and screwed			SUM	
3	1.3 Final phase balancing on DB's			SUM	
	<u>1.4 Documentation</u>				
4	1.4.1 As-built drawings for new electrical installation			SUM	
5	1.4.2 Certificates of compliance for complete installation			SUM	
	<u>1.5 Guarantee</u>				
6	1.5.1 12 month equipment and installation guarantee period			SUM	
	<u>1.6 Site Costs</u>				
7	1.6.1 Site establishment			SUM	
8	1.6.2 Site store & storeman	No	10		
9	1.6.3 Site office	No	10		
10	1.6.4 Supervision	No	10		
11	1.6.5 Additional 24 Hr Security December Holidays	No	20		
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	BILL NO.1 : GENERAL REQUIREMENTS				

**UPGRADING AND RENOVATIONS OF EXISTING FACILITIES
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	<u>BILL NO. 2</u>			
	<u>LOW VOLTAGE CABLE INSTALLATION</u>			
	<u>2.1 Construct cable trenches:</u>			
1	2.1.1 Excavate in all materials for trenches, backfill, compact and dispose surplus materials	m3	10	
2	2.1.2 Extra over item 2.1.1 for excavating in hard material	m3	1	
	<u>2.2 Supply and deliver cable ladders complete with all accessories</u>			
3	2.2.1 76mm Wide light duty Cabstrut LCT hot dip galvanised cable ladder	m	55	
4	2.2.2 76mm Wide light duty Cabstrut LCT hot dip galvanised cable ladder elbow	No	4	
5	2.2.3 76mm Wide light duty Cabstrut LCT hot dip galvanised cable ladder dropper	No	4	
6	2.2.4 76mm Wide light duty Cabstrut LCT hot dip galvanised cable ladder tee	No	1	
7	2.2.5 76mm Wide light duty Cabstrut LCT hot dip galvanised cable ladder 4-way	No	1	
8	2.2.6 76mm Wide light duty Cabstrut LCT hot dip galvanised cable ladder splice sets	No	20	
	<u>2.3 Install cable ladders complete with all accessories</u>			
9	2.3.1 76mm Wide light duty Cabstrut LCT hot dip galvanised cable ladder	m	55	
10	2.3.2 76mm Wide light duty Cabstrut LCT hot dip galvanised cable ladder elbow	No	4	
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**UPGRADING AND RENOVATIONS OF EXISTING FACILITIES
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1	2.3.3 76mm Wide light duty Cabstrut LCT hot dip galvanised cable ladder dropper	No	4		
2	2.3.4 76mm Wide light duty Cabstrut LCT hot dip galvanised cable ladder tee	No	1		
3	2.3.5 76mm Wide light duty Cabstrut LCT hot dip galvanised cable ladder 4-way	No	1		
4	2.3.6 76mm Wide light duty Cabstrut LCT hot dip galvanised cable ladder splice sets	No	20		
<u>2.4 Supply and delivery of PVC/SWA/PVC Cu low-voltage cable:</u>					
5	2.4.1 10 mm ² , 3-core	m	35		
6	2.4.2 6 mm ² , 3-core	m	30		
<u>2.5 Install LV cable:</u>					
7	2.5.1 10 mm ² , 3-core	m	35		
8	2.5.2 6 mm ² , 3-core	m	30		
<u>2.6 Terminate low voltage cable:</u>					
9	2.6.1 10 mm ² , 3-core	No	12		
10	2.6.2 6mm ² , 3-core	No	16		
11	2.7 Cable marking with Gravoplast at either end end, below termination shroud			SUM	
<u>2.8 Supply and delivery of corrugated PVC cable sleeves:</u>					
12	2.8.1 110mm dia	m	1		
13	2.8.2 50mm dia	m	25		
<u>2.9 Install cable sleeves:</u>					
14	2.9.1 110mm dia	m	1		
15	2.9.2 50mm dia	m	25		
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**UPGRADING AND RENOVATIONS OF EXISTING FACILITIES
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SECTION 2 : ELECTRICAL INSTALLATIONS

BILL NO.2 : LOW CABLE INSTALLATIONS

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	<u>SECTION No. 2 - ELECTRICAL INSTALLATIONS</u>				
	<u>BILL NO. 3</u>				
	<u>DISTRIBUTION BOARDS</u>				
	<u>3.1 Supply and deliver distribution boards as specified on drawings</u>				
1	3.1.1 DB-GH	No	1		
2	3.1.2 DB-CR	No	1		
	<u>3.2 Install distribution boards</u>				
3	3.2.1 DB-GH	No	1		
4	3.2.2 DB-CR	No	1		
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**UPGRADING AND RENOVATIONS OF EXISTING FACILITIES
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	<u>SECTION No. 2 - ELECTRICAL INSTALLATIONS</u>			
	<u>BILL NO. 4</u>			
	<u>LIGHTING INSTALLATION</u>			
	<u>4.1 Supply and deliver light switches</u>			
1	4.1.1 16A single lever one way	No 250		
2	4.1.2 16A two lever one way	No 1		
3	4.1.2 16A single lever two way	No 32		
4	4.1.3 16A three lever one way	No 1		
5	4.1.4 10A PIR motion sensor	No 288		
	<u>4.2 Install light switches</u>			
6	4.2.1 16A single lever one way	No 250		
7	4.2.2 16A two lever one way	No 1		
8	4.1.2 16A single lever two way	No 32		
9	4.2.3 16A three lever one way	No 1		
10	4.2.4 10A PIR motion sensor	No 288		
	<u>4.3 Supply and deliver light fittings complete with lamps and electronic control gear</u>			
11	4.3.1 Type L1	No 58		
12	4.3.2 Type L2	No 603		
13	4.3.3 Type L2/E	No 40		
14	4.3.4 Type L3	No 41		
15	4.3.5 Type D	No 103		
	Carried to Collection		R	
	Bill No. 4			
	BILL NO.4 : LIGHTNING INSTALLATIONS			

**UPGRADING AND RENOVATIONS OF EXISTING FACILITIES
AT UNISA SOLOMON MAHLANGU BUILDING, PRETORIA, 0002
TENDER BILL OF QUANTITIES**

1	4.3.6 Type D/E	No	20
2	4.3.7 Type D1	No	60
3	4.3.8 Type B1	No	5
4	4.3.9 Emergency EXIT sign	No	25
<u>4.4 Install light fittings complete with lamps</u>			
5	4.4.1 Type L1	No	58
6	4.4.2 Type L2	No	603
7	4.4.3 Type L2/E	No	40
8	4.4.4 Type L3	No	41
9	4.4.5 Type D	No	103
10	4.4.6 Type D/E	No	20
11	4.4.7 Type D1	No	60
12	4.4.8 Type B1	No	5
13	4.4.9 Emergency EXIT sign	No	25
Carried to Collection			
R			
BILL NO.4 : LIGHTNING INSTALLATIONS			

**UPGRADING AND RENOVATIONS OF EXISTING FACILITIES
AT UNISA SOLOMON MAHLANGU BUILDING, PRETORIA, 0002
TENDER BILL OF QUANTITIES**

SECTION 2 : ELECTRICAL INSTALLATIONS

BILL NO.4 : LIGHTNING INSTALLATIONS

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Bill No. 4

BILL NO.4 : LIGHTNING INSTALLATIONS

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UPGRADING AND RENOVATIONS OF EXISTING FACILITIES
AT UNISA SOLOMON MAHLANGU BUILDING, PRETORIA, 0002
TENDER BILL OF QUANTITIES

Item No			Quantity	Rate	Amount
	<u>SECTION No. 2 - ELECTRICAL INSTALLATIONS</u>				
	<u>BILL NO. 5</u>				
	<u>POWER OUTLETS</u>				
	<u>5.1 Supply and deliver powerskirting mounted socket outlets</u>				
1	5.1.1 16A 3-pin single switched socket outlet	No	584		
2	5.1.2 16A 3-pin dedicated single switched socket	No	1		
	<u>5.2 Install socket outlets</u>				
3	5.2.1 16A 3-pin single switched socket outlet	No	584		
4	5.2.2 16A 3-pin dedicated single switched socket	No	1		
	<u>5.3 Supply and deliver flush mounted socket outlets</u>				
5	5.3.1 16A 3-pin single switched socket outlet	No	20		
6	5.3.2 16A 3-pin double switched socket outlet	No	46		
7	5.3.3 16A 3-pin dedicated single switched socket outlet including red male plug top	No	1		
8	5.3.4 16A 3-pin dedicated double switched socket outlet including red male plug top	No	1		
	<u>5.4 Install socket outlets</u>				
9	5.4.1 16A 3-pin single switched socket outlet	No	20		
10	5.4.2 16A 3-pin double switched socket outlet	No	46		
11	5.4.3 16A 3-pin dedicated single switched socket outlet including red male plug top	No	1		
12	5.4.4 16A 3-pin dedicated double switched socket outlet including red male plug top	No	1		
	Carried to Collection				
	Bill No. 5				R
	BILL NO.5 : POWER OUTLETS				

**UPGRADING AND RENOVATIONS OF EXISTING FACILITIES
AT UNISA SOLOMON MAHLANGU BUILDING, PRETORIA, 0002
TENDER BILL OF QUANTITIES**

	<u>5.7 Supply and deliver flush mounted socket outlets in ceiling for projector</u>				
1	5.7.1 16A 3-pin single switched socket outlet	No	6		
	<u>5.8 Install socket outlets in ceiling</u>				
2	5.8.1 16A 3-pin single switched socket outlet	No	6		
	<u>5.9 Supply and deliver surface mounted socket outlets in ceiling light points</u>				
3	5.9.1 5A 3-pin single unswitched socket outlet	No	701		
	<u>5.10 Install socket outlets in ceiling</u>				
4	5.10.1 5A 3-pin single unswitched socket outlet	No	701		
	<u>5.11 Supply and deliver isolators for fixed equipment</u>				
5	5.11.1 60A Triple pole surface mounted IP56	No	10		
6	5.11.2 60A Double pole flush mounted	No	1		
7	5.11.3 20A Triple pole surface mounted	No	20		
8	5.11.4 20A Double pole surface mounted	No	5		
	<u>5.12 Install isolators for fixed equipment</u>				
9	5.12.1 60A Triple pole surface mounted IP56	No	10		
10	5.12.2 60A Double pole flush mounted	No	1		
11	5.12.3 20A Triple pole surface mounted	No	20		
12	5.12.4 20A Double pole surface mounted	No	5		
	<u>5.13 Connect fixed equipment (including 1m kopex sprague and connectors)</u>				
13	5.13.1 3-phase plus earth	No	30		
14	5.13.2 Single phase plus earth wire	No	6		
	Carried to Collection			R	
	Bill No. 5				
	BILL NO.5 : POWER OUTLETS				

**UPGRADING AND RENOVATIONS OF EXISTING FACILITIES
AT UNISA SOLOMON MAHLANGU BUILDING, PRETORIA, 0002
TENDER BILL OF QUANTITIES**

SECTION 2 : ELECTRICAL INSTALLATIONS

BILL NO.5 : POWER OUTLETS

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BILL NO.5 : POWER OUTLETS

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UPGRADING AND RENOVATIONS OF EXISTING FACILITIES
AT UNISA SOLOMON MAHLANGU BUILDING, PRETORIA, 0002
TENDER BILL OF QUANTITIES

Item No			Quantity	Rate	Amount
	<u>SECTION No. 2 - ELECTRICAL INSTALLATIONS</u>				
	<u>BILL NO. 6</u>				
	<u>WIRING, WIRE WAYS AND ACCESSORIES</u>				
	<u>6.1 Supply and deliver PVC insulated stranded copper conductors</u>				
1	6.1.1 2,5mm ²	m	12,600		
2	6.1.2 4mm ²	m	13,650		
3	6.1.3 6mm ²	m	500		
	<u>6.2 Install PVC insulated stranded copper conductors drawn into wire ways</u>				
4	6.2.1 2,5mm ²	m	12,600		
5	6.2.2 4mm ²	m	13,650		
6	6.2.3 6mm ²	m	500		
	<u>6.3 Supply and deliver bare stranded copper earth conductors</u>				
7	6.3.1 2,5mm ²	m	13,150		
8	6.3.2 4mm ²	m	250		
	<u>6.4 Install bare stranded copper earth conductors drawn into wire ways</u>				
9	6.4.1 2,5mm ²	m	13,150		
10	6.4.2 4mm ²	m	250		
	<u>6.5 Supply and deliver insulated copper earth conductors</u>				
11	6.5.1 6mm ²	m	1		
12	6.5.2 10mm ²	m	1		
	Carried to Collection				
	Bill No. 6				R
	BILL NO.6 : WIRING WIRE WAYS AND ACCESSORIES				

**UPGRADING AND RENOVATIONS OF EXISTING FACILITIES
AT UNISA SOLOMON MAHLANGU BUILDING, PRETORIA, 0002
TENDER BILL OF QUANTITIES**

<u>6.6 Install insulated copper earth conductors</u>				
1	6.6.1 6mm ²	m	1	
2	6.6.2 10mm ²	m	1	
<u>6.7 Supply and deliver conduit complete with accessories</u>				
3	6.7.1 25mm Ø galvanized steel with raised hospital saddles	m	1	
4	6.7.2 20mm Ø galvanized steel with raised hospital saddles	m	1	
5	6.7.3 32mm Ø PVC	m	20	
6	6.7.4 25mm Ø PVC	m	20	
7	6.7.5 20mm Ø PVC	m	150	
<u>6.8 Install conduit complete with accessories</u>				
8	6.8.1 25mm Ø galvanized steel with raised hospital saddles	m	1	
9	6.8.2 20mm Ø galvanized steel with raised hospital saddles	m	1	
10	6.8.3 32mm Ø PVC	m	20	
11	6.8.4 25mm Ø PVC	m	20	
12	6.8.5 20mm Ø PVC	m	150	
<u>6.9 Supply and deliver 2-compartment covers and all accessories</u>				
13	6.9.1 Cabstrut Platinum 2-compartment modular PVC power skirting	m	560	
<u>6.10 Install power skirting complete with covers and all accessories</u>				
14	6.10.1 Cabstrut Platinum 2-compartment modular PVC power skirting	m	560	
Carried to Collection				R
Bill No. 6				
BILL NO.6 : WIRING WIRE WAYS AND ACCESSORIES				

**UPGRADING AND RENOVATIONS OF EXISTING FACILITIES
AT UNISA SOLOMON MAHLANGU BUILDING, PRETORIA, 0002
TENDER BILL OF QUANTITIES**

SECTION 2 : ELECTRICAL INSTALLATIONS			
BILL NO.6 : WIRING WIRE WAYS AND ACCESSORIES			
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Bill No. 6			
BILL NO.6 : WIRING WIRE WAYS AND ACCESSORIES			

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AT UNISA SOLOMON MAHLANGU BUILDING, PRETORIA, 0002
TENDER BILL OF QUANTITIES**

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UPGRADING AND RENOVATIONS OF EXISTING FACILITIES
AT UNISA SOLOMON MAHLANGU BUILDING, PRETORIA, 0002
TENDER BILL OF QUANTITIES

Item No			Quantity	Rate	Amount
	<u>SECTION No. 2 - ELECTRICAL INSTALLATIONS</u>				
	<u>BILL NO. 8</u>				
	<u>DATA, TELEPHONE AND INSTALLATION</u>				
	<u>8.1 RJ45 Shuttered telephone and data outlets including shroud and mounting plate</u>				
1	8.1.1 Supply	No	500		
2	8.1.2 Install	No	500		
	<u>8.2 RJ11 Shuttered telephone and data outlets including shroud and mounting plate</u>				
3	8.2.1 Supply	No	500		
4	8.2.2 Install	No	500		
	Carried Forward to Summary of Section No. 2				
	Bill No. 8				
	BILL NO.8 : DATA, TELEPHONE AND INSTALLATION				
				R	

**UPGRADING AND RENOVATIONS OF EXISTING FACILITIES
AT UNISA SOLOMON MAHLANGU BUILDING, PRETORIA, 0002
TENDER BILL OF QUANTITIES**

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**UPGRADING AND RENOVATIONS OF EXISTING FACILITIES
AT UNISA SOLOMON MAHLANGU BUILDING, PRETORIA, 0002
TENDER BILL OF QUANTITIES**

Item No		Quantity	Rate	Amount
	<u>SECTION No. 3 - HVAC INSTALLATIONS</u>			
	<u>GENERAL NOTES TO THE TENDERER</u>			
	<u>MECHANICAL BILLS OF QUANTITIES</u>			
	<p>1. These Bills of Quantities form part of, and must be read in conjunction with, the specification and drawings, which documents contain the full descriptions of the work to be done and material and equipment to be used. Unless otherwise described in the Bills of Quantities, reference should be made to the Project Specification for the full meaning of descriptions of work to be done and materials and equipment to be used in this service.</p> <p>2. Only those cells specifically highlighted are available for data input or erasure. No alteration, erasure or addition may be made to the typed text of the Bills of Quantities. Should any alteration, erasure or addition be made - other than in the areas allowed for this - that alteration, erasure or addition will not be recognised but the original wording of the Bill of Quantities will remain in force.</p> <p>3. The Priced Bills of Quantities of the successful Tenderer will be checked, and the Engineer reserves the right to call for adjustments to any individual price, or to rectify any discrepancy whilst the total Tender Price, as submitted, remains unaltered.</p> <p>4. The responsibility for the accuracy of the quantities written into the Bills by the tenderer remains with the Tenderer who shall not be relieved of responsibility for measuring quantities at the Tender stage.</p> <p>5. The Tender Sum submitted shall, in all respects, be the Tenderer's representation of the Project Value defined by the quantities set out in the Bills of Quantities.</p> <p>6. The Tenderer shall make his assessment of components such as brackets, fixing, etc., from details stated in the Bills and shall include in the item prices for such small installation materials required for complete installation in accordance with the Specification.</p>			
	Carried to Collection		R	
	Bill No. 1			
	Notes to Tenderers			

**UPGRADING AND RENOVATIONS OF EXISTING FACILITIES
AT UNISA SOLOMON MAHLANGU BUILDING, PRETORIA, 0002
TENDER BILL OF QUANTITIES**

7. The successful Tenderer and the Employer, or his Agent, may agree that the total of the Bill or Bills, including any variations by way of additions thereto or deductions therefrom, represents a fair and accurate quantification of the items set out in the Bills and the parties may agree to final payment on that basis. In the event of any dispute as to the quantities, then the disputed item or items shall be adjusted where necessary by the Engineer.

8. The quantities in these Bills of Quantities are not to be used for ordering materials.

9. Variations in the scope and extent of the work included in the Bills shall be allowed to meet the Employer's requirements and shall be measured and costed at rates entered in the Bills, where appropriate, and shall form an addition to or deduction from the total of the Bills. Any items or variation for which rates have not been included in the Bills shall be agreed and priced as non-scheduled items, in accordance with the provisions of the Contract.

10. The rules governing the extent and costing of the variation shall be those provided for in the Conditions of Contract form.

11. Variations to the planning before the work has been executed shall be priced as above. Alterations to work already executed cannot necessarily be priced as above and must be reviewed on their merits.

12. Unless a separate rate for the supply and for the installation of any item is specifically called for, the supply and installation costs of any item shall be fully included in the unit price.

13. The description of each item shall, unless otherwise stated herein, be held to include manufacture, conveying and delivering, unloading, storing, unpacking, hoisting, setting, fitting and fixing in position, cutting and waste, patterns, models and templates, plant, temporary works, return of packings, establishment charges, profit and all other obligations arising out of the Conditions of Contract.

14. All measurements are net, unless otherwise stated, and Tenderers must allow for wastage in their declared rates.

Carried to Collection

Bill No. 1
Notes to Tenderers

R

**UPGRADING AND RENOVATIONS OF EXISTING FACILITIES
AT UNISA SOLOMON MAHLANGU BUILDING, PRETORIA, 0002
TENDER BILL OF QUANTITIES**

1	<p>15. All provisional sums shall be expended as directed by the Engineer and any balance remaining shall be deducted from the amount of the Contract Sum.</p> <p>16. All items described as "Provisional" shall be measured as executed and paid for according to prices in the Bills of Quantities and any unexpended amounts shall be deducted from the amount of the Contract Sum. No work for which "Provisional" items are provided shall be commenced without written instructions from the Engineer.</p> <p>17. It is a requirement of the Contract that the work shall be carried out in the manner, which is most economical on materials. Unless detailed by the Engineer, the electrician is required to use the shortest practical route for conduits and cables, subject to the restrictions of the specification and good electrical practice.</p> <p>18. Any work for which a budgetary allowance has been made, shall be priced in terms of the n/s agreement. Any balance remaining shall be deducted from the budgetary allowance in the n/s contract sum.</p> <p>19. Where escalation is calculated in terms of the JBCC formula all non-scheduled item prices must be de-escalated to the base date.</p> <p>20. Twelve (12) Month Guarantee (must included in costings)</p>	Item		
	Carried to Collection		R	

Bill No. 1
Notes to Tenderers

**UPGRADING AND RENOVATIONS OF EXISTING FACILITIES
AT UNISA SOLOMON MAHLANGU BUILDING, PRETORIA, 0002
TENDER BILL OF QUANTITIES**

SECTION 3 : HVAC INSTALLATIONS

Notes to Tenderers

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Notes to Tenderers

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**UPGRADING AND RENOVATIONS OF EXISTING FACILITIES
AT UNISA SOLOMON MAHLANGU BUILDING, PRETORIA, 0002
TENDER BILL OF QUANTITIES**

Item No		Quantity	Rate	Amount
<u>SECTION No. 3 - HVAC INSTALLATIONS</u>				
<u>BILL NO.1</u>				
<u>PRELIMINARY & GENERAL</u>				
<u>1.00 Preliminary & General Items and Allowances</u>				
	The tendered sum shall include full compensation for all preliminaries			
1	1.02 Site establishment costs		SUM	
	The tendered sum shall include full compensation for all site establishment cost for the duration of the entire project.			
2	1.03 Programming of the works co-ordination and attending progress meetings		SUM	
	The tendered sum shall include full compensation for programming of the works co-ordination and attending progress meetings for the duration of the entire project.			
3	1.04 Management and programming of the works		SUM	
	The tendered sum shall include full compensation for management and programming of the works as specified for the duration of the entire project.			
4	1.05 Insurances as required by the contract		SUM	
	The tendered sum shall include full compensation for all required rigging and hoisting.			
5	1.06 3 complete sets of operating and maintenance manuals		SUM	
	The tendered sum shall include full compensation for complete O&M manuals as per the specifications.			
6	1.07 Testing, balancing, commissioning and handover		SUM	
	The tendered sum shall include full compensation for all testing and commissioning.			
	Carried to Collection		R	
	Bill No. 2			
	Bill NO. 1 PRELIMINARY & GENERAL			

**UPGRADING AND RENOVATIONS OF EXISTING FACILITIES
AT UNISA SOLOMON MAHLANGU BUILDING, PRETORIA, 0002
TENDER BILL OF QUANTITIES**

1	1.08 Protection against possible damage to equipment	SUM
	The tendered sum shall include full compensation for possible damage to equipment as per the specifications.	
2	1.09 Cleaning and start-up of the installation	SUM
	The tendered sum shall include full compensation for all cleaning and start-up.	
3	1.10 Providing and implementing an approved quality assurance/quality control system	SUM
	The tendered sum shall include full compensation for a quality assurance system approved by the engineer.	
4	1.11 One year comprehensive maintenance and guarantees	SUM
	The tendered sum shall include full compensation for a 12 month guarantee and maintenance on the entire system.	
5	1.12 Training of personnel	SUM
	The tendered sum shall include full compensation for training of personal as specified.	
6	1.13 Performance security costs	SUM
	The tendered sum shall include full compensation for all performance security costs.	
7	1.14 Preparation of shop drawings, equipment submissions	SUM
	The tendered sum shall include full compensation for complete shop drawings and equipment submissions as specified.	
8	1.15 Submission of samples	SUM
	The tendered sum shall include full compensation for all submission of samples	
9	1.16 Preparation and submission of "As built" drawings	SUM
	Carried to Collection	R
	Bill No. 2	
	Bill NO. 1 PRELIMINARY & GENERAL	

**UPGRADING AND RENOVATIONS OF EXISTING FACILITIES
AT UNISA SOLOMON MAHLANGU BUILDING, PRETORIA, 0002
TENDER BILL OF QUANTITIES**

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**UPGRADING AND RENOVATIONS OF EXISTING FACILITIES
AT UNISA SOLOMON MAHLANGU BUILDING, PRETORIA, 0002
TENDER BILL OF QUANTITIES**

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**UPGRADING AND RENOVATIONS OF EXISTING FACILITIES
AT UNISA SOLOMON MAHLANGU BUILDING, PRETORIA, 0002
TENDER BILL OF QUANTITIES**

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**UPGRADING AND RENOVATIONS OF EXISTING FACILITIES
AT UNISA SOLOMON MAHLANGU BUILDING, PRETORIA, 0002
TENDER BILL OF QUANTITIES**

GROUND FLOOR HVAC SERVICES

**2.0 ROOF MOUNTED AND SPACE INSTALLED AIR
CONDITIONING EQUIPMENT**

Refer to Drawings TCE-1142-M-TD-AC-001,
TCE-1142-M-TD-AC-007 and TCE-1142-M-TD-AC-008

Supply and install fully self contained, air cooled, heat recovery type VRF air conditioning systems, complete with heat recovery, to provide zone controlled heating and cooling facilities to the areas specified.

The air conditioning system shall be supplied and supported by a well established and reputable company, who represents the manufacturer of the equipment offered, and provides a comprehensive after sales and technical support service within South Africa.

The equipment offered may be of Daikin, LG, Mitsubishi, Samsung - or equal and approved - manufacture. All equipment offered shall be supported by selection data and manufacturer / supplier's standard equipment specifications.

Equipment specified below is indicative of the design requirements and shall be selected and costed against the variances that may occur due to manufacturer's specifications and performance data.

The equipment offered shall comply with the requirements of the Montreal and Kyoto Protocols on Substances that Deplete the Ozone Layer.

All equipment offered and installed shall operate on R410A refrigerant gas - or such compliant gas as may become the recognised standard or norm - and shall be installed in a compliant and professional manner.

All equipment and peripheral components shall be new and shall carry a minimum of One Year's Warranty from the date of start up for commissioning and handover.

All rates to include Materials, Labour, Transport, Handling and Overhead costs normally associated with the procurement, supply and installation of HVAC equipment and services

PRIMARY CONDENSING EQUIPMENT

Carried to Collection

Bill No. 3

Bill NO. 2 GROUND FLOOR HVAC SERVICES

R

**UPGRADING AND RENOVATIONS OF EXISTING FACILITIES
AT UNISA SOLOMON MAHLANGU BUILDING, PRETORIA, 0002
TENDER BILL OF QUANTITIES**

2.01 VRF Condensing Unit CU-01N (North Tower Ground Floor)

- 1 Heat Recovery VRF Condensing unit, complete with all necessary interlocking jointing pipes, balancing electronics, safety devices and mechanisms, and arbitrary devices required to provide a fully functional VRF condensing unit with a nominal operational capacity of 56kW cooling and 63kW heating.

The final electrical supply shall be terminated from a suitable three phase (3/380/50) isolator, installed adjacent to the unit by others, to comply with the requirements of the equipment manufacturer and his designated local supplier.

No

1

2.02 VRF Condensing Unit CU-01S (South Tower Ground Floor)

- 2 Heat Recovery VRF Condensing unit, complete with all necessary interlocking jointing pipes, balancing electronics, safety devices and mechanisms, and arbitrary devices required to provide a fully functional VRF condensing unit with a nominal operational capacity of 35kW cooling and 40kW heating.

The final electrical supply shall be terminated from a suitable three phase (3/380/50) isolator, installed adjacent to the unit by others, to comply with the requirements of the equipment manufacturer and his designated local supplier.

No

1

PRIMARY EVAPORATING EQUIPMENT

The terminal units shall be fixed to the soffit of existing slab with approved expansion fixings. The final electrical supply shall be terminated with 5 Amp single phase (1/230/50) plugtops to dedicated outlets, installed adjacent to the units by others.

Internal Cassette Unit

2.03 ICU-01 : 2.8 kW One way blow cassette unit.

- 3 North Tower

No

1

- 4 South Tower

No

11

Carried to Collection

R

Bill No. 3

Bill NO. 2 GROUND FLOOR HVAC SERVICES

**UPGRADING AND RENOVATIONS OF EXISTING FACILITIES
AT UNISA SOLOMON MAHLANGU BUILDING, PRETORIA, 0002
TENDER BILL OF QUANTITIES**

<u>2.04 ICU-02 : 3.4 kW Four way blow cassette unit.</u>				
1	South Tower	No	3	
<u>2.05 ICU-03 : 7.1 kW Four way blow cassette unit.</u>				
2	South Tower	No	4	
<u>Ducted Hideaway Unit</u>				
<u>2.06 IHA-01 : 14.8 kW Ducted Hideaway unit.</u>				
3	North Tower	No	2	
<u>Thermostats and Controllers</u>				
4	2.07 Wall mounted wired thermostat in 50 x 100 Drawbox	No	14	
<u>REFRIGERATION BRANCH PIPE UNITS (RPB)</u>				
Jointing branch couplings shall be supplied by the same manufacturer as the principle VRF equipment.				
All components shall be installed simultaneously with the main refrigerant piping and shall be fully compliant with the requirements of the plant as a whole.				
Refrigerant Pipe Branches shall be installed as directed by the equipment manufacturers specification and shall be complete with all necessary fixings, mounting equipment and ancillary components as may be required by the manufacturer / supplier and good practise norms.				
<u>Refrigeration Reticulation Pipe Branches - Pipe Branch units to be as specified by the manufacturer of equipment offered.</u>				
5	2.08 Main Refrigeration risers to floor reticulation piping as manufacturer specified and approved	No	2	
<u>HEAT RECOVERY CONTROL BOXES</u>				
Quantities of Refrigerant Controller Units - including all accessories, fittings, installation, etc. to ensure a fully functional system as per the specifications and relevant standards - to be confirmed by supplier.				
Carried to Collection				R
Bill No. 3				
Bill NO. 2 GROUND FLOOR HVAC SERVICES				

**UPGRADING AND RENOVATIONS OF EXISTING FACILITIES
AT UNISA SOLOMON MAHLANGU BUILDING, PRETORIA, 0002
TENDER BILL OF QUANTITIES**

1	2.09 4 Port Unit	m	2
2	2.10 8 Port Unit	No	2
<u>REFRIGERATION PIPING</u>			
The tendered rates shall include full cost value for the installation of the refrigerant pipes identified, inclusive of the costs for supply of all materials, cutting, installing, jointing and brackets.			
<u>R410A quality soft and hard drawn refrigeration piping supplied and installed to equipment manufacturer's requirement.</u>			
<u>Length of refrigerant piping to be measured and confirmed by the selected supplier.</u>			
3	2.11 ø6.35	m	149
4	2.12 ø9.52	m	49
5	2.13 ø12.7	m	169
6	2.14 ø15.88	m	61
7	2.15 ø19.05	m	31
8	2.16 ø22.2	m	26
9	2.17 ø28.58	m	39
Carried to Collection			
Bill No. 3			
Bill NO. 2 GROUND FLOOR HVAC SERVICES			

**UPGRADING AND RENOVATIONS OF EXISTING FACILITIES
AT UNISA SOLOMON MAHLANGU BUILDING, PRETORIA, 0002
TENDER BILL OF QUANTITIES**

CLOSED CELL PIPE INSULATION

The tendered rates shall include full cost value for the installation of the preformed, closed cell insulation with impervious external barrier over installed refrigeration piping.

Sections identified, inclusive of the costs for supply of all materials, cutting, installing, jointing and hermetic seal banding.

Armaflex - or equal and approved - preformed, closed cell insulation with impervious external barrier. Installed over high grade refrigeration piping. All installation processes to be in conformance with supplier specifications and requirement. Sections shall be permanently bonded with good quality contact adhesive prior to application of a finishing band of Lasso - or equal and approved - hermetic tape.

Length of refrigerant piping to be measured and confirmed by the selected supplier. Closed cell insulation sections to be 1,800mm or 2,000mm long, as determined by the supplier standard.

1	2.18 ø6.35	m	149
2	2.19 ø9.52	m	49
3	2.20 ø12.7	m	169
4	2.21 ø15.88	m	61
5	2.22 ø19.05	m	31
6	2.23 ø22.2	m	26
7	2.24 ø28.58	m	39

Carried to Collection

Bill No. 3
Bill NO. 2 GROUND FLOOR HVAC SERVICES

R

**UPGRADING AND RENOVATIONS OF EXISTING FACILITIES
AT UNISA SOLOMON MAHLANGU BUILDING, PRETORIA, 0002
TENDER BILL OF QUANTITIES**

CABLE TRAY and LADDER

Medium grade Galvanised cable trays or cable ladders, fixed to slabs with and approved retaining method.

Horizontally installed cable trays and ladders shall be fixed to the slab, or other immovable surface, above with threaded rods, with a minimum of 8mm diameter, fixed in Hilti or equal and approved expansion bolts. All fixtures in expansion bolts shall be "back locked" with appropriate sized flat washers and lock nuts.

1	2.25 152mm Medium Duty Cable Tray	m	120
2	2.26 Cable tray joint splices	No	32

GALVANISED SHEET STEEL DUCTING AND ACCESSORIES

Supply and install exposed, uninsulated sheet steel ducting as detailed. Ducting to be fixed to the underside of slab with minimum 8mm diameter threaded rod supports, grouted into the slab above with approved expanding fixings. All expansion fixings are to be "backlocked" with flat washers and lock nuts.

Straight Duct

3	2.27 900 x 300	m	5
4	2.28 600 x 300	m	5
5	2.29 300 x 300	m	5

Transformation Duct

6	2.30 1007 x 294 to 900 x 300 - 600mm long	No	2
7	2.31 900 x 300 to 600 x 300 - 600mm long	No	2
8	2.32 600 x 300 to 300 x 300 - 600mm long	No	2

Stop Ends

9	2.33 300 x 300 - 50mm long	No	2
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Carried to Collection

R

Bill No. 3
Bill NO. 2 GROUND FLOOR HVAC SERVICES

**UPGRADING AND RENOVATIONS OF EXISTING FACILITIES
AT UNISA SOLOMON MAHLANGU BUILDING, PRETORIA, 0002
TENDER BILL OF QUANTITIES**

**NATURAL ANODISED ALUMINIUM SUPPLY AIR
GRILLES**

Supply and install natural anodised aluminium, double deflection grilles to the side walls of horizontal ducts as indicated.

1	2.34 300 x 200 Supply Air Grille	No	12	
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FLEXIBLE DUCT CONNECTOR

Supply and install purpose made flexible unit to duct connector.

2	2.35 1004 x 297 to 1000 x 300 - 150mm long	No	2	
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DEDICATED CONDENSATE DRAINS AND PIPING

Supply and install good quality PVC drain pipes, complete with all necessary and approved fixings to support the reticulated drain pipes from the existing roof slabs.

Installed piping is to be complete with all interfacing connections between the discharge of HVAC units and shall be watertight in all respects.

All piping is to be installed with a minimal downfal gradient to ensure constant water flow while maintaining the restriction of space requirements within the ceiling void.

3	2.36 50mm Diameter PVC drain line.	No	240	
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4	2.37 50 x 25 x 50 unequal PVC Tee Pieces	No	21	
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5	2.38 50mm PVC Inspection Elbows	No	4	
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Carried to Collection

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Bill No. 3

Bill NO. 2 GROUND FLOOR HVAC SERVICES

**UPGRADING AND RENOVATIONS OF EXISTING FACILITIES
AT UNISA SOLOMON MAHLANGU BUILDING, PRETORIA, 0002
TENDER BILL OF QUANTITIES**

SECTION 3 : HVAC INSTALLATIONS

Bill NO. 2 GROUND FLOOR HVAC SERVICES

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Bill No. 3

Bill NO. 2 GROUND FLOOR HVAC SERVICES

**UPGRADING AND RENOVATIONS OF EXISTING FACILITIES
AT UNISA SOLOMON MAHLANGU BUILDING, PRETORIA, 0002
TENDER BILL OF QUANTITIES**

Item No		Quantity	Rate	Amount
	<u>SECTION No. 3 - HVAC INSTALLATIONS</u>			
	<u>BILL NO.3</u>			
	<u>FIRST FLOOR HVAC SERVICES</u>			
	<p>ROOF MOUNTED AND SPACE INSTALLED AIR CONDITIONING EQUIPMENT</p> <p>Refer to Drawings TCE-1142-M-TD-AC-002, TCE-1142-M-TD-AC-007 and TCE-1142-M-TD-AC-008</p> <p>Supply and install fully self contained, air cooled, heat recovery type VRF air conditioning systems, complete with heat recovery, to provide zone controlled heating and cooling facilities to the areas specified.</p> <p>The air conditioning system shall be supplied and supported by a well established and reputable company, who represents the manufacturer of the equipment offered, and provides a comprehensive after sales and technical support service within South Africa.</p> <p>The equipment offered may be of Daikin, LG, Mitsubishi, Samsung - or equal and approved - manufacture. All equipment offered shall be supported by selection data and manufacturer / supplier's standard equipment specifications.</p> <p>Equipment specified below is indicative of the design requirements and shall be selected and costed against the variances that may occur due to manufacturer's specifications and performance data.</p> <p>The equipment offered shall comply with the requirements of the Montreal and Kyoto Protocols on Substances that Deplete the Ozone Layer.</p> <p>All equipment offered and installed shall operate on R410A refrigerant gas - or such compliant gas as may become the recognised standard or norm - and shall be installed in a compliant and professional manner.</p> <p>All equipment and peripheral components shall be new and shall carry a minimum of One Year's Warranty from the date of start up for commissioning and handover.</p> <p>All rates to include Materials, Labour, Transport,</p>			
	Carried to Collection		R	
	Bill No. 4			
	Bill NO. 3 FIRST FLOOR HVAC SERVICES			

**UPGRADING AND RENOVATIONS OF EXISTING FACILITIES
AT UNISA SOLOMON MAHLANGU BUILDING, PRETORIA, 0002
TENDER BILL OF QUANTITIES**

Handling and Overhead costs normally associated with the procurement, supply and installation of HVAC equipment and services

PRIMARY CONDENSING EQUIPMENT

3.01 VRF Condensing Unit CU-02N (North Tower First Floor)

- 1 Heat Recovery VRF Condensing unit, complete with all necessary interlocking jointing pipes, balancing electronics, safety devices and mechanisms, and arbitrary devices required to provide a fully functional VRF condensing unit with a nominal operational capacity of 62kW cooling and 70kW heating.

The final electrical supply shall be terminated from a suitable three phase (3/380/50) isolator, installed adjacent to the unit by others, to comply with the requirements of the equipment manufacturer and his designated local supplier.

No

1

3.02 VRF Condensing Unit CU-02S (South Tower First Floor)

- 2 Heat Recovery VRF Condensing unit, complete with all necessary interlocking jointing pipes, balancing electronics, safety devices and mechanisms, and arbitrary devices required to provide a fully functional VRF condensing unit with a nominal operational capacity of 45kW cooling and 50kW heating.

The final electrical supply shall be terminated from a suitable three phase (3/380/50) isolator, installed adjacent to the unit by others, to comply with the requirements of the equipment manufacturer and his designated local supplier.

No

1

PRIMARY EVAPORATING EQUIPMENT

The terminal units shall be fixed to the soffit of existing slab with approved expansion fixings. The final electrical supply shall be terminated with 5 Amp single phase (1/230/50) plugtops to dedicated outlets, installed adjacent to the units by others.

Internal Cassette Unit

Carried to Collection

R

Bill No. 4

Bill NO. 3 FIRST FLOOR HVAC SERVICES

**UPGRADING AND RENOVATIONS OF EXISTING FACILITIES
AT UNISA SOLOMON MAHLANGU BUILDING, PRETORIA, 0002
TENDER BILL OF QUANTITIES**

3.03 ICU-01 : 2.8 kW One way blow cassette unit.

1	North Tower	No	14
2	South Tower	No	19

3.04 ICU-03 : 7.1 kW Four way blow cassette unit.

3	South Tower	No	4
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Thermostats and Controllers

4	3.05 Wall mounted wired thermostat in 50 x 100 Drawbox	No	36
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REFRIGERATION BRANCH PIPE UNITS (RPB)

Jointing branch couplings shall be supplied by the same manufacturer as the principle VRF equipment.

All components shall be installed simultaneously with the main refrigerant piping and shall be fully compliant with the requirements of the plant as a whole.

Refrigerant Pipe Branches shall be installed as directed by the equipment manufacturers specification and shall be complete with all necessary fixings, mounting equipment and ancillary components as may be required by the manufacturer / supplier and good practise norms.

Refrigeration Reticulation Pipe Branches - Pipe Branch units to be as specified by the manufacturer of equipment offered.

5	3.06 Main Refrigeration risers to floor reticulation piping as manufacturer specified and approved	No	2
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HEAT RECOVERY CONTROL BOXES

Quantities of Refrigerant Controller Units - including all accessories, fittings, installation, etc. to ensure a fully functional system as per the specifications and relevant standards - to be confirmed by supplier.

6	3.07 4 Port Unit	No	2
7	3.08 8 Port Unit	No	4

Carried to Collection

R

Bill No. 4

Bill NO. 3 FIRST FLOOR HVAC SERVICES

**UPGRADING AND RENOVATIONS OF EXISTING FACILITIES
AT UNISA SOLOMON MAHLANGU BUILDING, PRETORIA, 0002
TENDER BILL OF QUANTITIES**

REFRIGERATION PIPING

The tendered rates shall include full cost value for the installation of the refrigerant pipes identified, inclusive of the costs for supply of all materials, cutting, installing, jointing and brackets.

R410A quality soft and hard drawn refrigeration piping supplied and installed to equipment manufacturer's requirement.

Length of refrigerant piping to be measured and confirmed by the selected supplier.

1	3.09 ø6.35	m	283
2	3.10 ø9.52	m	65
3	3.11 ø12.7	m	325
4	3.12 ø15.88	m	76
5	3.13 ø19.05	m	45
6	3.14 ø22.2	m	67
7	3.15 ø28.58	m	94

Carried to Collection

Bill No. 4
Bill NO. 3 FIRST FLOOR HVAC SERVICES

R

**UPGRADING AND RENOVATIONS OF EXISTING FACILITIES
AT UNISA SOLOMON MAHLANGU BUILDING, PRETORIA, 0002
TENDER BILL OF QUANTITIES**

CLOSED CELL PIPE INSULATION

The tendered rates shall include full cost value for the installation of the preformed, closed cell insulation with impervious external barrier over installed refrigeration piping.

Sections identified, inclusive of the costs for supply of all materials, cutting, installing, jointing and hermetic seal banding.

Armaflex - or equal and approved - preformed, closed cell insulation with impervious external barrier. Installed over high grade refrigeration piping. All installation processes to be in conformance with supplier specifications and requirement. Sections shall be permanently bonded with good quality contact adhesive prior to application of a finishing band of Lasso - or equal and approved - hermetic tape.

Length of refrigerant piping to be measured and confirmed by the selected supplier. Closed cell insulation sections to be 1,800mm or 2,000mm long, as determined by the supplier standard.

1	3.16 ø6.35	m	283
2	3.17 ø9.52	m	65
3	3.18 ø12.7	m	325
4	3.19 ø15.88	m	76
5	3.20 ø19.05	m	45
6	3.21 ø22.2	m	67
7	3.22 ø28.58	m	94

Carried to Collection

Bill No. 4
Bill NO. 3 FIRST FLOOR HVAC SERVICES

R

**UPGRADING AND RENOVATIONS OF EXISTING FACILITIES
AT UNISA SOLOMON MAHLANGU BUILDING, PRETORIA, 0002
TENDER BILL OF QUANTITIES**

CABLE TRAY and LADDER

Medium grade Galvanised cable trays or cable ladders, fixed to slabs with and approved retaining method.

Horizontally installed cable trays and ladders shall be fixed to the slab, or other immovable surface, above with threaded rods, with a minimum of 8mm diameter, fixed in Hilti or equal and approved expansion bolts. All fixtures in expansion bolts shall be "back locked" with appropriate sized flat washers and lock nuts.

1	3.23 152mm Medium Duty Cable Tray	m	140
2	3.24 Cable tray joint splices	No	36

DEDICATED CONDENSATE DRAINS AND PIPING

Supply and install good quality PVC drain pipes, complete with all necessary and approved fixings to support the reticulated drain pipes from the existing roof slabs.

Installed piping is to be complete with all interfacing connections between the discharge of HVAC units and shall be watertight in all respects.

All piping is to be installed with a minimal downfal gradient to ensure constant water flow while maintaining the restriction of space requirements within the ceiling void.

3	3.25 50mm Diameter PVC drain line.	No	240
4	3.26 50 x 25 x 50 unequal PVC Tee Pieces	No	21
5	3.27 50mm PVC Inspection Elbows	No	4

Carried to Collection

Bill No. 4

Bill NO. 3 FIRST FLOOR HVAC SERVICES

R

**UPGRADING AND RENOVATIONS OF EXISTING FACILITIES
AT UNISA SOLOMON MAHLANGU BUILDING, PRETORIA, 0002
TENDER BILL OF QUANTITIES**

SECTION 3 : HVAC INSTALLATIONS

Bill NO. 3 FIRST FLOOR HVAC SERVICES

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Bill NO. 3 FIRST FLOOR HVAC SERVICES

**UPGRADING AND RENOVATIONS OF EXISTING FACILITIES
AT UNISA SOLOMON MAHLANGU BUILDING, PRETORIA, 0002
TENDER BILL OF QUANTITIES**

Item No		Quantity	Rate	Amount
	<u>SECTION No. 3 - HVAC INSTALLATIONS</u>			
	<u>BILL NO.4</u>			
	<u>SECOND FLOOR HVAC SERVICES</u>			
	ROOF MOUNTED AND SPACE INSTALLED AIR CONDITIONING EQUIPMENT			
	Refer to Drawings TCE-1142-M-TD-AC-003, TCE-1142-M-TD-AC-007 and TCE-1142-M-TD-AC-008			
	Supply and install fully self contained, air cooled, heat recovery type VRF air conditioning systems, complete with heat recovery, to provide zone controlled heating and cooling facilities to the areas specified.			
	The air conditioning system shall be supplied and supported by a well established and reputable company, who represents the manufacturer of the equipment offered, and provides a comprehensive after sales and technical support service within South Africa.			
	The equipment offered may be of Daikin, LG, Mitsubishi, Samsung - or equal and approved - manufacture. All equipment offered shall be supported by selection data and manufacturer / supplier's standard equipment specifications.			
	Equipment specified below is indicative of the design requirements and shall be selected and costed against the variances that may occur due to manufacturer's specifications and performance data.			
	The equipment offered shall comply with the requirements of the Montreal and Kyoto Protocols on Substances that Deplete the Ozone Layer.			
	All equipment offered and installed shall operate on R410A refrigerant gas - or such compliant gas as may become the recognised standard or norm - and shall be installed in a compliant and professional manner.			
	All equipment and peripheral components shall be new and shall carry a minimum of One Year's Warranty from the date of start up for commissioning and handover.			
	All rates to include Materials, Labour, Transport,			
	Carried to Collection		R	
	Bill No. 5			
	Bill NO. 4 SECOND FLOOR HVAC SERVICES			

**UPGRADING AND RENOVATIONS OF EXISTING FACILITIES
AT UNISA SOLOMON MAHLANGU BUILDING, PRETORIA, 0002
TENDER BILL OF QUANTITIES**

Handling and Overhead costs normally associated with the procurement, supply and installation of HVAC equipment and services

PRIMARY CONDENSING EQUIPMENT

4.01 VRF Condensing Unit CU-03N (North Tower Second Floor)

- 1 Heat Recovery VRF Condensing unit, complete with all necessary interlocking jointing pipes, balancing electronics, safety devices and mechanisms, and arbitrary devices required to provide a fully functional VRF condensing unit with a nominal operational capacity of 62kW cooling and 70kW heating.

The final electrical supply shall be terminated from a suitable three phase (3/380/50) isolator, installed adjacent to the unit by others, to comply with the requirements of the equipment manufacturer and his designated local supplier.

No

1

4.02 VRF Condensing Unit CU-03S (South Tower Second Floor)

- 2 Heat Recovery VRF Condensing unit, complete with all necessary interlocking jointing pipes, balancing electronics, safety devices and mechanisms, and arbitrary devices required to provide a fully functional VRF condensing unit with a nominal operational capacity of 45kW cooling and 50kW heating.

The final electrical supply shall be terminated from a suitable three phase (3/380/50) isolator, installed adjacent to the unit by others, to comply with the requirements of the equipment manufacturer and his designated local supplier.

No

1

PRIMARY EVAPORATING EQUIPMENT

The terminal units shall be fixed to the soffit of existing slab with approved expansion fixings.

The final electrical supply shall be terminated with 5 Amp single phase (1/230/50) plugtops to dedicated outlets, installed adjacent to the units by others.

Internal Cassette Unit

Carried to Collection

R

Bill No. 5

Bill NO. 4 SECOND FLOOR HVAC SERVICES

**UPGRADING AND RENOVATIONS OF EXISTING FACILITIES
AT UNISA SOLOMON MAHLANGU BUILDING, PRETORIA, 0002
TENDER BILL OF QUANTITIES**

4.03 ICU-01 : 2.8 kW One way blow cassette unit.

1	North Tower	No	27
2	South Tower	No	19

Thermostats and Controllers

3	3.05 Wall mounted wired thermostat in 50 x 100 Drawbox	No	46
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REFRIGERATION BRANCH PIPE UNITS (RPB)

Jointing branch couplings shall be supplied by the same manufacturer as the principle VRF equipment.

All components shall be installed simultaneously with the main refrigerant piping and shall be fully compliant with the requirements of the plant as a whole.

Refrigerant Pipe Branches shall be installed as directed by the equipment manufacturers specification and shall be complete with all necessary fixings, mounting equipment and ancillary components as may be required by the manufacturer / supplier and good practise norms.

Refrigeration Reticulation Pipe Branches - Pipe Branch units to be as specified by the manufacturer of equipment offered.

4	4.04 Main Refrigeration risers to floor reticulation piping as manufacturer specified and approved	No	2
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HEAT RECOVERY CONTROL BOXES

Quantities of Refrigerant Controller Units - including all accessories, fittings, installation, etc. to ensure a fully functional system as per the specifications and relevant standards - to be confirmed by supplier.

5	4.05 4 Port Unit	No	2
6	4.06 8 Port Unit	No	5

Carried to Collection

R

Bill No. 5
Bill NO. 4 SECOND FLOOR HVAC SERVICES

UPGRADING AND RENOVATIONS OF EXISTING FACILITIES
AT UNISA SOLOMON MAHLANGU BUILDING, PRETORIA, 0002
TENDER BILL OF QUANTITIES

REFRIGERATION PIPING

The tendered rates shall include full cost value for the installation of the refrigerant pipes identified, inclusive of the costs for supply of all materials, cutting, installing, jointing and brackets.

R410A quality soft and hard drawn refrigeration piping supplied and installed to equipment manufacturer's requirement.

Length of refrigerant piping to be measured and confirmed by the selected supplier.

1	4.07 ø6.35	m	313
2	4.08 ø9.52	m	22
3	4.09 ø12.7	m	343
4	4.10 ø15.88	m	44
5	4.11 ø19.05	m	11
6	4.12 ø22.2	m	39
7	4.13 ø28.58	m	67

Carried to Collection

Bill No. 5
Bill NO. 4 SECOND FLOOR HVAC SERVICES

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**UPGRADING AND RENOVATIONS OF EXISTING FACILITIES
AT UNISA SOLOMON MAHLANGU BUILDING, PRETORIA, 0002
TENDER BILL OF QUANTITIES**

CLOSED CELL PIPE INSULATION

The tendered rates shall include full cost value for the installation of the preformed, closed cell insulation with impervious external barrier over installed refrigeration piping.

Sections identified, inclusive of the costs for supply of all materials, cutting, installing, jointing and hermetic seal banding.

Armaflex - or equal and approved - preformed, closed cell insulation with impervious external barrier. Installed over high grade refrigeration piping. All installation processes to be in conformance with supplier specifications and requirement. Sections shall be permanently bonded with good quality contact adhesive prior to application of a finishing band of Lasso - or equal and approved - hermetic tape.

Length of refrigerant piping to be measured and confirmed by the selected supplier. Closed cell insulation sections to be 1,800mm or 2,000mm long, as determined by the supplier standard.

1	4.14 ø6.35	m	313
2	4.15 ø9.52	m	22
3	4.16 ø12.7	m	343
4	4.17 ø15.88	m	44
5	4.18 ø19.05	m	11
6	4.19 ø22.2	m	39
7	4.20 ø28.58	m	67

Carried to Collection

Bill No. 5
Bill NO. 4 SECOND FLOOR HVAC SERVICES

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**UPGRADING AND RENOVATIONS OF EXISTING FACILITIES
AT UNISA SOLOMON MAHLANGU BUILDING, PRETORIA, 0002
TENDER BILL OF QUANTITIES**

CABLE TRAY and LADDER

Medium grade Galvanised cable trays or cable ladders, fixed to slabs with and approved retaining method.

Horizontally installed cable trays and ladders shall be fixed to the slab, or other immovable surface, above with threaded rods, with a minimum of 8mm diameter, fixed in Hilti or equal and approved expansion bolts. All fixtures in expansion bolts shall be "back locked" with appropriate sized flat washers and lock nuts.

1	4.21 152mm Medium Duty Cable Tray	m	140
2	4.22 Cable tray joint splices	No	36

DEDICATED CONDENSATE DRAINS AND PIPING

Supply and install good quality PVC drain pipes, complete with all necessary and approved fixings to support the reticulated drain pipes from the existing roof slabs.

Installed piping is to be complete with all interfacing connections between the discharge of HVAC units and shall be watertight in all respects.

All piping is to be installed with a minimal downfal gradient to ensure constant water flow while maintaining the restriction of space requirements within the ceiling void.

3	4.23 50mm Diameter PVC drain line.	No	240
4	4.24 50 x 25 x 50 unequal PVC Tee Pieces	No	21
5	4.25 50mm PVC Inspection Elbows	No	4

Carried to Collection

Bill No. 5

Bill NO. 4 SECOND FLOOR HVAC SERVICES

R

**UPGRADING AND RENOVATIONS OF EXISTING FACILITIES
AT UNISA SOLOMON MAHLANGU BUILDING, PRETORIA, 0002
TENDER BILL OF QUANTITIES**

SECTION 3 : HVAC INSTALLATIONS

Bill NO. 4 SECOND FLOOR HVAC SERVICES

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Bill No. 5

Bill NO. 4 SECOND FLOOR HVAC SERVICES

**UPGRADING AND RENOVATIONS OF EXISTING FACILITIES
AT UNISA SOLOMON MAHLANGU BUILDING, PRETORIA, 0002
TENDER BILL OF QUANTITIES**

Item No	Quantity	Rate	Amount
<u>SECTION No. 3 - HVAC INSTALLATIONS</u>			
<u>BILL NO.5</u>			
<u>THIRD FLOOR HVAC SERVICES</u>			
<p>ROOF MOUNTED AND SPACE INSTALLED AIR CONDITIONING EQUIPMENT</p> <p>Refer to Drawings TCE-1142-M-TD-AC-004, TCE-1142-M-TD-AC-007 and TCE-1142-M-TD-AC-008</p> <p>Supply and install fully self contained, air cooled, heat recovery type VRF air conditioning systems, complete with heat recovery, to provide zone controlled heating and cooling facilities to the areas specified.</p> <p>The air conditioning system shall be supplied and supported by a well established and reputable company, who represents the manufacturer of the equipment offered, and provides a comprehensive after sales and technical support service within South Africa.</p> <p>The equipment offered may be of Daikin, LG, Mitsubishi, Samsung - or equal and approved - manufacture. All equipment offered shall be supported by selection data and manufacturer / supplier's standard equipment specifications.</p> <p>Equipment specified below is indicative of the design requirements and shall be selected and costed against the variances that may occur due to manufacturer's specifications and performance data.</p> <p>The equipment offered shall comply with the requirements of the Montreal and Kyoto Protocols on Substances that Deplete the Ozone Layer.</p> <p>All equipment offered and installed shall operate on R410A refrigerant gas - or such compliant gas as may become the recognised standard or norm - and shall be installed in a compliant and professional manner.</p> <p>All equipment and peripheral components shall be new and shall carry a minimum of One Year's Warranty from the date of start up for commissioning and handover.</p> <p>All rates to include Materials, Labour, Transport,</p>			
Carried to Collection			R
<p>Bill No. 6</p> <p>BILL NO. 5 THIRD FLOOR HVAC SERVICES</p>			

**UPGRADING AND RENOVATIONS OF EXISTING FACILITIES
AT UNISA SOLOMON MAHLANGU BUILDING, PRETORIA, 0002
TENDER BILL OF QUANTITIES**

Handling and Overhead costs normally associated with the procurement, supply and installation of HVAC equipment and services

PRIMARY CONDENSING EQUIPMENT

5.01 VRF Condensing Unit CU-04N (North Tower Third Floor)

- 1 Heat Recovery VRF Condensing unit, complete with all necessary interlocking jointing pipes, balancing electronics, safety devices and mechanisms, and arbitrary devices required to provide a fully functional VRF condensing unit with a nominal operational capacity of 62kW cooling and 70kW heating.

The final electrical supply shall be terminated from a suitable three phase (3/380/50) isolator, installed adjacent to the unit by others, to comply with the requirements of the equipment manufacturer and his designated local supplier.

No

1

5.02 VRF Condensing Unit CU-04S (South Tower Third Floor)

- 2 Heat Recovery VRF Condensing unit, complete with all necessary interlocking jointing pipes, balancing electronics, safety devices and mechanisms, and arbitrary devices required to provide a fully functional VRF condensing unit with a nominal operational capacity of 45kW cooling and 50kW heating.

The final electrical supply shall be terminated from a suitable three phase (3/380/50) isolator, installed adjacent to the unit by others, to comply with the requirements of the equipment manufacturer and his designated local supplier.

No

1

PRIMARY EVAPORATING EQUIPMENT

The terminal units shall be fixed to the soffit of existing slab with approved expansion fixings.

The final electrical supply shall be terminated with 5 Amp single phase (1/230/50) plugtops to dedicated outlets, installed adjacent to the units by others.

Internal Cassette Unit

Carried to Collection

R

Bill No. 6

BILL NO. 5 THIRD FLOOR HVAC SERVICES

**UPGRADING AND RENOVATIONS OF EXISTING FACILITIES
AT UNISA SOLOMON MAHLANGU BUILDING, PRETORIA, 0002
TENDER BILL OF QUANTITIES**

5.03 ICU-01 : 2.8 kW One way blow cassette unit.

1	North Tower	No	27
2	South Tower	No	19

Thermostats and Controllers

3	3.05 Wall mounted wired thermostat in 50 x 100 Drawbox	No	46
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REFRIGERATION BRANCH PIPE UNITS (RPB)

Jointing branch couplings shall be supplied by the same manufacturer as the principle VRF equipment.

All components shall be installed simultaneously with the main refrigerant piping and shall be fully compliant with the requirements of the plant as a whole.

Refrigerant Pipe Branches shall be installed as directed by the equipment manufacturers specification and shall be complete with all necessary fixings, mounting equipment and ancillary components as may be required by the manufacturer / supplier and good practise norms.

Refrigeration Reticulation Pipe Branches - Pipe Branch units to be as specified by the manufacturer of equipment offered.

4	5.04 Main Refrigeration risers to floor reticulation piping as manufacturer specified and approved	No	2
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HEAT RECOVERY CONTROL BOXES

Quantities of Refrigerant Controller Units - including all accessories, fittings, installation, etc. to ensure a fully functional system as per the specifications and relevant standards - to be confirmed by supplier.

5	5.05 4 Port Unit	No	2
6	5.06 8 Port Unit	No	5

Carried to Collection

R

Bill No. 6
BILL NO. 5 THIRD FLOOR HVAC SERVICES

UPGRADING AND RENOVATIONS OF EXISTING FACILITIES
AT UNISA SOLOMON MAHLANGU BUILDING, PRETORIA, 0002
TENDER BILL OF QUANTITIES

REFRIGERATION PIPING

The tendered rates shall include full cost value for the installation of the refrigerant pipes identified, inclusive of the costs for supply of all materials, cutting, installing, jointing and brackets.

R410A quality soft and hard drawn refrigeration piping supplied and installed to equipment manufacturer's requirement.

Length of refrigerant piping to be measured and confirmed by the selected supplier.

1	5.07 ø6.35	m	313
2	5.08 ø9.52	m	19
3	5.09 ø12.7	m	360
4	5.10 ø15.88	m	54
5	5.11 ø19.05	m	24
6	5.12 ø22.2	m	49
7	5.13 ø28.58	m	71

Carried to Collection

Bill No. 6
BILL NO. 5 THIRD FLOOR HVAC SERVICES

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**UPGRADING AND RENOVATIONS OF EXISTING FACILITIES
AT UNISA SOLOMON MAHLANGU BUILDING, PRETORIA, 0002
TENDER BILL OF QUANTITIES**

CLOSED CELL PIPE INSULATION

The tendered rates shall include full cost value for the installation of the preformed, closed cell insulation with impervious external barrier over installed refrigeration piping.

Sections identified, inclusive of the costs for supply of all materials, cutting, installing, jointing and hermetic seal banding.

Armaflex - or equal and approved - preformed, closed cell insulation with impervious external barrier. Installed over high grade refrigeration piping. All installation processes to be in conformance with supplier specifications and requirement. Sections shall be permanently bonded with good quality contact adhesive prior to application of a finishing band of Lasso - or equal and approved - hermetic tape.

Length of refrigerant piping to be measured and confirmed by the selected supplier. Closed cell insulation sections to be 1,800mm or 2,000mm long, as determined by the supplier standard.

1	5.14 ø6.35	m	313
2	5.15 ø9.52	m	19
3	5.16 ø12.7	m	360
4	5.17 ø15.88	m	54
5	5.18 ø19.05	m	24
6	5.19 ø22.2	m	49
7	5.20 ø28.58	m	71

Carried to Collection

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BILL NO. 5 THIRD FLOOR HVAC SERVICES

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**UPGRADING AND RENOVATIONS OF EXISTING FACILITIES
AT UNISA SOLOMON MAHLANGU BUILDING, PRETORIA, 0002
TENDER BILL OF QUANTITIES**

CABLE TRAY and LADDER

Medium grade Galvanised cable trays or cable ladders, fixed to slabs with and approved retaining method.

Horizontally installed cable trays and ladders shall be fixed to the slab, or other immovable surface, above with threaded rods, with a minimum of 8mm diameter, fixed in Hilti or equal and approved expansion bolts. All fixtures in expansion bolts shall be "back locked" with appropriate sized flat washers and lock nuts.

1	5.21 152mm Medium Duty Cable Tray	m	140
2	5.22 Cable tray joint splices	No	36

DEDICATED CONDENSATE DRAINS AND PIPING

Supply and install good quality PVC drain pipes, complete with all necessary and approved fixings to support the reticulated drain pipes from the existing roof slabs.

Installed piping is to be complete with all interfacing connections between the discharge of HVAC units and shall be watertight in all respects.

All piping is to be installed with a minimal downfal gradient to ensure constant water flow while maintaining the restriction of space requirements within the ceiling void.

3	5.23 50mm Diameter PVC drain line.	No	240
4	5.24 50 x 25 x 50 unequal PVC Tee Pieces	No	21
5	5.25 50mm PVC Inspection Elbows	No	4

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BILL NO. 5 THIRD FLOOR HVAC SERVICES

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**UPGRADING AND RENOVATIONS OF EXISTING FACILITIES
AT UNISA SOLOMON MAHLANGU BUILDING, PRETORIA, 0002
TENDER BILL OF QUANTITIES**

SECTION 3 : HVAC INSTALLATIONS

BILL NO. 5 THIRD FLOOR HVAC SERVICES

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BILL NO. 5 THIRD FLOOR HVAC SERVICES

**UPGRADING AND RENOVATIONS OF EXISTING FACILITIES
AT UNISA SOLOMON MAHLANGU BUILDING, PRETORIA, 0002
TENDER BILL OF QUANTITIES**

Item No	Quantity	Rate	Amount
<u>SECTION No. 3 - HVAC INSTALLATIONS</u>			
<u>BILL NO.6</u>			
<u>FOURTH FLOOR HVAC SERVICES</u>			
<p>ROOF MOUNTED AND SPACE INSTALLED AIR CONDITIONING EQUIPMENT</p> <p>Refer to Drawings TCE-1142-M-TD-AC-005, TCE-1142-M-TD-AC-007 and TCE-1142-M-TD-AC-008</p> <p>Supply and install fully self contained, air cooled, heat recovery type VRF air conditioning systems, complete with heat recovery, to provide zone controlled heating and cooling facilities to the areas specified.</p> <p>The air conditioning system shall be supplied and supported by a well established and reputable company, who represents the manufacturer of the equipment offered, and provides a comprehensive after sales and technical support service within South Africa.</p> <p>The equipment offered may be of Daikin, LG, Mitsubishi, Samsung - or equal and approved - manufacture. All equipment offered shall be supported by selection data and manufacturer / supplier's standard equipment specifications.</p> <p>Equipment specified below is indicative of the design requirements and shall be selected and costed against the variances that may occur due to manufacturer's specifications and performance data.</p> <p>The equipment offered shall comply with the requirements of the Montreal and Kyoto Protocols on Substances that Deplete the Ozone Layer.</p> <p>All equipment offered and installed shall operate on R410A refrigerant gas - or such compliant gas as may become the recognised standard or norm - and shall be installed in a compliant and professional manner.</p> <p>All equipment and peripheral components shall be new and shall carry a minimum of One Year's Warranty from the date of start up for commissioning and handover.</p> <p>All rates to include Materials, Labour, Transport,</p>			
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**UPGRADING AND RENOVATIONS OF EXISTING FACILITIES
AT UNISA SOLOMON MAHLANGU BUILDING, PRETORIA, 0002
TENDER BILL OF QUANTITIES**

Handling and Overhead costs normally associated with the procurement, supply and installation of HVAC equipment and services

PRIMARY CONDENSING EQUIPMENT

6.01 VRF Condensing Unit CU-05N (North Tower Fourth Floor)

- 1 Heat Recovery VRF Condensing unit, complete with all necessary interlocking jointing pipes, balancing electronics, safety devices and mechanisms, and arbitrary devices required to provide a fully functional VRF condensing unit with a nominal operational capacity of 62kW cooling and 70kW heating.

The final electrical supply shall be terminated from a suitable three phase (3/380/50) isolator, installed adjacent to the unit by others, to comply with the requirements of the equipment manufacturer and his designated local supplier.

No

1

6.02 VRF Condensing Unit CU-05S (South Tower Fourth Floor)

- 2 Heat Recovery VRF Condensing unit, complete with all necessary interlocking jointing pipes, balancing electronics, safety devices and mechanisms, and arbitrary devices required to provide a fully functional VRF condensing unit with a nominal operational capacity of 45kW cooling and 50kW heating.

The final electrical supply shall be terminated from a suitable three phase (3/380/50) isolator, installed adjacent to the unit by others, to comply with the requirements of the equipment manufacturer and his designated local supplier.

No

1

PRIMARY EVAPORATING EQUIPMENT

The terminal units shall be fixed to the soffit of existing slab with approved expansion fixings. The final electrical supply shall be terminated with 5 Amp single phase (1/230/50) plugtops to dedicated outlets, installed adjacent to the units by others.

Internal Cassette Unit

Carried to Collection

R

Bill No. 7

Bill NO. 6 FOURTH FLOOR HVAC SERVICES

**UPGRADING AND RENOVATIONS OF EXISTING FACILITIES
AT UNISA SOLOMON MAHLANGU BUILDING, PRETORIA, 0002
TENDER BILL OF QUANTITIES**

6.03 ICU-01 : 2.8 kW One way blow cassette unit.

1	North Tower	No	27
2	South Tower	No	19

Thermostats and Controllers

3	3.05 Wall mounted wired thermostat in 50 x 100 Drawbox	No	46
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REFRIGERATION BRANCH PIPE UNITS (RPB)

Jointing branch couplings shall be supplied by the same manufacturer as the principle VRF equipment.

All components shall be installed simultaneously with the main refrigerant piping and shall be fully compliant with the requirements of the plant as a whole.

Refrigerant Pipe Branches shall be installed as directed by the equipment manufacturers specification and shall be complete with all necessary fixings, mounting equipment and ancillary components as may be required by the manufacturer / supplier and good practise norms.

Refrigeration Reticulation Pipe Branches - Pipe Branch units to be as specified by the manufacturer of equipment offered.

4	6.04 Main Refrigeration risers to floor reticulation piping as manufacturer specified and approved	No	2
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HEAT RECOVERY CONTROL BOXES

Quantities of Refrigerant Controller Units - including all accessories, fittings, installation, etc. to ensure a fully functional system as per the specifications and relevant standards - to be confirmed by supplier.

5	6.05 4 Port Unit	No	2
6	6.06 8 Port Unit	No	5

Carried to Collection

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Bill No. 7

Bill NO. 6 FOURTH FLOOR HVAC SERVICES

**UPGRADING AND RENOVATIONS OF EXISTING FACILITIES
AT UNISA SOLOMON MAHLANGU BUILDING, PRETORIA, 0002
TENDER BILL OF QUANTITIES**

REFRIGERATION PIPING

The tendered rates shall include full cost value for the installation of the refrigerant pipes identified, inclusive of the costs for supply of all materials, cutting, installing, jointing and brackets.

R410A quality soft and hard drawn refrigeration piping supplied and installed to equipment manufacturer's requirement.

Length of refrigerant piping to be measured and confirmed by the selected supplier.

1	6.07 ø6.35	m	313
2	6.08 ø9.52	m	19
3	6.09 ø12.7	m	358
4	6.10 ø15.88	m	51
5	6.11 ø19.05	m	24
6	6.12 ø22.2	m	47
7	6.13 ø28.58	m	63

Carried to Collection

Bill No. 7
Bill NO. 6 FOURTH FLOOR HVAC SERVICES

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**UPGRADING AND RENOVATIONS OF EXISTING FACILITIES
AT UNISA SOLOMON MAHLANGU BUILDING, PRETORIA, 0002
TENDER BILL OF QUANTITIES**

CLOSED CELL PIPE INSULATION

The tendered rates shall include full cost value for the installation of the preformed, closed cell insulation with impervious external barrier over installed refrigeration piping.

Sections identified, inclusive of the costs for supply of all materials, cutting, installing, jointing and hermetic seal banding.

Armaflex - or equal and approved - preformed, closed cell insulation with impervious external barrier. Installed over high grade refrigeration piping. All installation processes to be in conformance with supplier specifications and requirement. Sections shall be permanently bonded with good quality contact adhesive prior to application of a finishing band of Lasso - or equal and approved - hermetic tape.

Length of refrigerant piping to be measured and confirmed by the selected supplier. Closed cell insulation sections to be 1,800mm or 2,000mm long, as determined by the supplier standard.

1	6.14 ø6.35	m	313
2	6.15 ø9.52	m	19
3	6.16 ø12.7	m	358
4	6.17 ø15.88	m	51
5	6.18 ø19.05	m	24
6	6.19 ø22.2	m	47
7	6.20 ø28.58	m	63

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**UPGRADING AND RENOVATIONS OF EXISTING FACILITIES
AT UNISA SOLOMON MAHLANGU BUILDING, PRETORIA, 0002
TENDER BILL OF QUANTITIES**

CABLE TRAY and LADDER

Medium grade Galvanised cable trays or cable ladders, fixed to slabs with and approved retaining method.

Horizontally installed cable trays and ladders shall be fixed to the slab, or other immovable surface, above with threaded rods, with a minimum of 8mm diameter, fixed in Hilti or equal and approved expansion bolts. All fixtures in expansion bolts shall be "back locked" with appropriate sized flat washers and lock nuts.

1	6.21 152mm Medium Duty Cable Tray	m	140
2	6.22 Cable tray joint splices	No	36

DEDICATED CONDENSATE DRAINS AND PIPING

Supply and install good quality PVC drain pipes, complete with all necessary and approved fixings to support the reticulated drain pipes from the existing roof slabs.

Installed piping is to be complete with all interfacing connections between the discharge of HVAC units and shall be watertight in all respects.

All piping is to be installed with a minimal downfal gradient to ensure constant water flow while maintaining the restriction of space requirements within the ceiling void.

3	6.23 50mm Diameter PVC drain line.	No	240
4	6.24 50 x 25 x 50 unequal PVC Tee Pieces	No	21
5	6.25 50mm PVC Inspection Elbows	No	4

Carried to Collection

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Bill NO. 6 FOURTH FLOOR HVAC SERVICES

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**UPGRADING AND RENOVATIONS OF EXISTING FACILITIES
AT UNISA SOLOMON MAHLANGU BUILDING, PRETORIA, 0002
TENDER BILL OF QUANTITIES**

SECTION 3 : HVAC INSTALLATIONS

Bill NO. 6 FOURTH FLOOR HVAC SERVICES

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Bill NO. 6 FOURTH FLOOR HVAC SERVICES

**UPGRADING AND RENOVATIONS OF EXISTING FACILITIES
AT UNISA SOLOMON MAHLANGU BUILDING, PRETORIA, 0002
TENDER BILL OF QUANTITIES**

Item No		Quantity	Rate	Amount
	<u>SECTION No. 3 - HVAC INSTALLATIONS</u>			
	<u>BILL NO.7</u>			
	<u>FIFTH FLOOR HVAC SERVICES</u>			
	<p>ROOF MOUNTED AND SPACE INSTALLED AIR CONDITIONING EQUIPMENT</p> <p>Refer to Drawings TCE-1142-M-TD-AC-006, TCE-1142-M-TD-AC-007 and TCE-1142-M-TD-AC-008</p> <p>Supply and install fully self contained, air cooled, heat recovery type VRF air conditioning systems, complete with heat recovery, to provide zone controlled heating and cooling facilities to the areas specified.</p> <p>The air conditioning system shall be supplied and supported by a well established and reputable company, who represents the manufacturer of the equipment offered, and provides a comprehensive after sales and technical support service within South Africa.</p> <p>The equipment offered may be of Daikin, LG, Mitsubishi, Samsung - or equal and approved - manufacture. All equipment offered shall be supported by selection data and manufacturer / supplier's standard equipment specifications.</p> <p>Equipment specified below is indicative of the design requirements and shall be selected and costed against the variances that may occur due to manufacturer's specifications and performance data.</p> <p>The equipment offered shall comply with the requirements of the Montreal and Kyoto Protocols on Substances that Deplete the Ozone Layer.</p> <p>All equipment offered and installed shall operate on R410A refrigerant gas - or such compliant gas as may become the recognised standard or norm - and shall be installed in a compliant and professional manner.</p> <p>All equipment and peripheral components shall be new and shall carry a minimum of One Year's Warranty from the date of start up for commissioning and handover.</p> <p>All rates to include Materials, Labour, Transport,</p>			
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**UPGRADING AND RENOVATIONS OF EXISTING FACILITIES
AT UNISA SOLOMON MAHLANGU BUILDING, PRETORIA, 0002
TENDER BILL OF QUANTITIES**

Handling and Overhead costs normally associated with the procurement, supply and installation of HVAC equipment and services

PRIMARY CONDENSING EQUIPMENT

7.01 VRF Condensing Unit CU-06N (North Tower Fifth Floor)

- 1 Heat Recovery VRF Condensing unit, complete with all necessary interlocking jointing pipes, balancing electronics, safety devices and mechanisms, and arbitrary devices required to provide a fully functional VRF condensing unit with a nominal operational capacity of 40kW cooling and 45kW heating.

The final electrical supply shall be terminated from a suitable three phase (3/380/50) isolator, installed adjacent to the unit by others, to comply with the requirements of the equipment manufacturer and his designated local supplier.

No

1

7.02 VRF Condensing Unit CU-06S (South Tower Fifth Floor)

- 2 Heat Recovery VRF Condensing unit, complete with all necessary interlocking jointing pipes, balancing electronics, safety devices and mechanisms, and arbitrary devices required to provide a fully functional VRF condensing unit with a nominal operational capacity of 45kW cooling and 50kW heating.

Heat Recovery VRF Condensing unit, complete with all necessary interlocking jointing pipes, balancing electronics, safety devices and mechanisms, and arbitrary devices required to provide a fully functional VRF condensing unit with a nominal operational capacity of 45kW cooling and 50kW heating.

No

1

PRIMARY EVAPORATING EQUIPMENT

The terminal units shall be fixed to the soffit of existing slab with approved expansion fixings. The final electrical supply shall be terminated with 5 Amp single phase (1/230/50) plugtops to dedicated outlets, installed adjacent to the units by others.

Internal Cassette Unit

Carried to Collection

R

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**UPGRADING AND RENOVATIONS OF EXISTING FACILITIES
AT UNISA SOLOMON MAHLANGU BUILDING, PRETORIA, 0002
TENDER BILL OF QUANTITIES**

7.03 ICU-01 : 2.8 kW One way blow cassette unit.

1	North Tower	No	1
2	South Tower	No	19

Ducted Hideaway Unit

7.04 IHA-01 : 14.8 kW Ducted Hideaway unit.

3	North Tower	No	3
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Thermostats and Controllers

4	7.05 Wall mounted wired thermostat in 50 x 100 Drawbox	No	20
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REFRIGERATION BRANCH PIPE UNITS (RPB)

Jointing branch couplings shall be supplied by the same manufacturer as the principle VRF equipment.

All components shall be installed simultaneously with the main refrigerant piping and shall be fully compliant with the requirements of the plant as a whole.

Refrigerant Pipe Branches shall be installed as directed by the equipment manufacturers specification and shall be complete with all necessary fixings, mounting equipment and ancillary components as may be required by the manufacturer / supplier and good practise norms.

Refrigeration Reticulation Pipe Branches - Pipe Branch units to be as specified by the manufacturer of equipment offered.

5	7.06 Main Refrigeration risers to floor reticulation piping as manufacturer specified and approved	No	2
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HEAT RECOVERY CONTROL BOXES

Quantities of Refrigerant Controller Units - including all accessories, fittings, installation, etc. to ensure a fully functional system as per the specifications and relevant standards - to be confirmed by supplier.

6	7.07 4 Port Unit	No	2
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**UPGRADING AND RENOVATIONS OF EXISTING FACILITIES
AT UNISA SOLOMON MAHLANGU BUILDING, PRETORIA, 0002
TENDER BILL OF QUANTITIES**

1	7.08 8 Port Unit	No	2
<u>REFRIGERATION PIPING</u> The tendered rates shall include full cost value for the installation of the refrigerant pipes identified, inclusive of the costs for supply of all materials, cutting, installing, jointing and brackets. <u>R410A quality soft and hard drawn refrigeration piping supplied and installed to equipment manufacturer's requirement.</u> <u>Length of refrigerant piping to be measured and confirmed by the selected supplier.</u>			
2	7.09 ø6.35	m	129
3	7.10 ø9.52	m	63
4	7.11 ø12.7	m	161
5	7.12 ø15.88	m	39
6	7.13 ø19.05	m	24
7	7.14 ø22.2	m	47
8	7.15 ø28.58	m	23
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**UPGRADING AND RENOVATIONS OF EXISTING FACILITIES
AT UNISA SOLOMON MAHLANGU BUILDING, PRETORIA, 0002
TENDER BILL OF QUANTITIES**

CLOSED CELL PIPE INSULATION

The tendered rates shall include full cost value for the installation of the preformed, closed cell insulation with impervious external barrier over installed refrigeration piping.

Sections identified, inclusive of the costs for supply of all materials, cutting, installing, jointing and hermetic seal banding.

Armaflex - or equal and approved - preformed, closed cell insulation with impervious external barrier. Installed over high grade refrigeration piping. All installation processes to be in conformance with supplier specifications and requirement. Sections shall be permanently bonded with good quality contact adhesive prior to application of a finishing band of Lasso - or equal and approved - hermetic tape.

Length of refrigerant piping to be measured and confirmed by the selected supplier. Closed cell insulation sections to be 1,800mm or 2,000mm long, as determined by the supplier standard.

1	7.16 ø6.35	m	129
2	7.17 ø9.52	m	63
3	7.18 ø12.7	m	161
4	7.19 ø15.88	m	39
5	7.20 ø19.05	m	24
6	7.21 ø22.2	m	47
7	7.22 ø28.58	m	23

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**UPGRADING AND RENOVATIONS OF EXISTING FACILITIES
AT UNISA SOLOMON MAHLANGU BUILDING, PRETORIA, 0002
TENDER BILL OF QUANTITIES**

CABLE TRAY and LADDER

Medium grade Galvanised cable trays or cable ladders, fixed to slabs with and approved retaining method.

Horizontally installed cable trays and ladders shall be fixed to the slab, or other immovable surface, above with threaded rods, with a minimum of 8mm diameter, fixed in Hilti or equal and approved expansion bolts. All fixtures in expansion bolts shall be "back locked" with appropriate sized flat washers and lock nuts.

1	7.23 152mm Medium Duty Cable Tray	m	120
2	7.24 Cable tray joint splices	No	32

GALVANISED SHEET STEEL DUCTING AND ACCESSORIES

Supply and install exposed, uninsulated sheet steel ducting as detailed. Ducting to be fixed to the underside of slab with minimum 8mm diameter threaded rod supports, grouted into the slab above with approved expanding fixings. All expansion fixings are to be "backlocked" with flat washers and lock nuts.

Straight Duct

3	7.25 900 x 300	m	7
4	7.26 600 x 300	m	7
5	7.27 300 x 300	m	7

Transformation Duct

6	7.28 1007 x 294 to 900 x 300 - 600mm long	No	3
7	7.29 900 x 300 to 600 x 300 - 600mm long	No	3
8	7.30 600 x 300 to 300 x 300 - 600mm long	No	3

Stop Ends

9	7.31 300 x 300 - 50mm long	No	3
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**UPGRADING AND RENOVATIONS OF EXISTING FACILITIES
AT UNISA SOLOMON MAHLANGU BUILDING, PRETORIA, 0002
TENDER BILL OF QUANTITIES**

FLEXIBLE DUCT CONNECTOR

Supply and install purpose made flexible unit to duct connector.

1	7.32 1004 x 297 to 1000 x 300 - 150mm long	No	3
2	7.33 200Ø Insulated Flexible Duct - Max 1500mm long	No	18
3	7.34 200Ø Flexible Duct Clamps	No	36

NATURAL ANODISED ALUMINIUM SUPPLY AIR GRILLES

Supply and install 200Ø Swirl Type ceiling mounted diffusers C/W 595 x 595 Face Plate, 300mm high Plenum and 200Ø spigots.

4	7.35 200Ø Supply Air Diffuser	No	18
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DEDICATED CONDENSATE DRAINS AND PIPING

Supply and install good quality PVC drain pipes, complete with all necessary and approved fixings to support the reticulated drain pipes from the existing roof slabs.

Installed piping is to be complete with all interfacing connections between the discharge of HVAC units and shall be watertight in all respects.

All piping is to be installed with a minimal downfall gradient to ensure constant water flow while maintaining the restriction of space requirements within the ceiling void.

5	7.36 50mm Diameter PVC drain line.	No	240
6	7.37 50 x 25 x 50 unequal PVC Tee Pieces	No	21
7	7.38 50mm PVC Inspection Elbows	No	4

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**UPGRADING AND RENOVATIONS OF EXISTING FACILITIES
AT UNISA SOLOMON MAHLANGU BUILDING, PRETORIA, 0002
TENDER BILL OF QUANTITIES**

SECTION 3 : HVAC INSTALLATIONS

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**UPGRADING AND RENOVATIONS OF EXISTING FACILITIES
AT UNISA SOLOMON MAHLANGU BUILDING, PRETORIA, 0002
TENDER BILL OF QUANTITIES**

Item No	Quantity	Rate	Amount
<u>SECTION No. 3 - HVAC INSTALLATIONS</u>			
<u>BILL NO.8</u>			
<u>LIFTS & ELEVATORS</u>			
<u>8.0 LIFTS and ELEVATORS</u>			
<p>Refurbish and rehabilitate the two (2) existing elevators serving Ground to Fifth Floors.</p> <p>Elevator A (Left hand elevator in main lobby) to be fully serviced and brought to operational standard complying with the requirements of the Deartment of Labour's Factory and Machinery Act.</p> <p>Elevator B (Right hand elevator in main lobby) to be rehabilitated to compliant status.</p> <p>Equipment specified below is indicative of the design requirements and shall be selected and costed against the variances that may occur due to manufacturer's specifications and performance data.</p> <p>The equipment offered shall comply with the requirements of the Montreal and Kyoto Protocols on Substances that Deplete the Ozone Layer.</p> <p>All equipment offered and installed shall operate on R410A refrigerant gas - or such compliant gas as may become the recognised standard or norm - and shall be installed in a compliant and professional manner.</p> <p>All equipment and peripheral components shall be new and shall carry a minimum of One Year's Warranty from the date of start up for commissioning and handover.</p> <p>All rates to include Materials, Labour, Transport, Handling and Overhead costs normally associated with the procurement, supply and installation of HVAC equipment and services</p>			
<u>PASSENGER LIFTS</u>			
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**UPGRADING AND RENOVATIONS OF EXISTING FACILITIES
AT UNISA SOLOMON MAHLANGU BUILDING, PRETORIA, 0002
TENDER BILL OF QUANTITIES**

8.01 ELEVATOR "A" (Left hand elevator in main lobby)

- 1 Undertake and complete a full major service to the existing passenger elevator.
All fixings, guides and operational equipment to be assessed and repaired, refurbished or replaced where necessary.
The refurbished passenger car is to be maintained to ensure full function and interface with operational equipment and software.
Complete works to comply with the operational requirements of the Department of Labour's Factory and Machinery Act.

No

1

8.02 ELEVATOR "B" (Right hand elevator in main lobby)

- 2 Undertake and complete rehabilitation of the installed elevator. The refurbished passenger car is to be maintained to ensure full function and interface with operational equipment and software. Rehabilitation of this elevator is to incorporate the repair and/or replacement of guide rails, fixings, drive train and control equipment. Complete works to comply with the operational requirements of the Department of Labour's Factory and Machinery Act.

No

1

DUMB WAITER (Northeast

- 3 Decommission and remove plant.

No

1

- 4 Frame and board redundant aperture

No

1

- 5 Plaster and paint finished surface

m2

3

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Bill No. 9

Bill NO. 8 LIFTS & ELEVATORS

**UPGRADING AND RENOVATIONS OF EXISTING FACILITIES
AT UNISA SOLOMON MAHLANGU BUILDING, PRETORIA, 0002
TENDER BILL OF QUANTITIES**

SECTION 3 : HVAC INSTALLATIONS

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Carried Forward to Summary of Section No. 3

Bill No. 9

Bill NO. 8 LIFTS & ELEVATORS

R

**UPGRADING AND RENOVATIONS OF EXISTING FACILITIES
AT UNISA SOLOMON MAHLANGU BUILDING, PRETORIA, 0002
TENDER BILL OF QUANTITIES**

Item No	Quantity	Rate	Amount
<u>SECTION No. 3 - HVAC INSTALLATIONS</u>			
<u>BILL NO.9</u>			
<u>FIRE PROTECTION SERVICES</u>			
<u>9.0 MOUNTED AND PORTABLE FIRE PROTECTION EQUIPMENT AND SIGNAGE</u>			
Refer to Drawings TCE-1142-M-TD-FS-001, TCE-1142-M-TD-FS-002, TCE-1142-M-TD-FS-003, TCE-1142-M-TD-FS-004, TCE-1142-M-TD-FS-005 and TCE-1142-M-TD-FS-006			
Supply and install fully compliant Fire Protection Equipment and Signage as detailed below.			
All supplied and installed equipment shall comply with the requirements of SANS 10400-T, SANS 10400-W and SANS 10139 as applicable.			
All signage will be photoluminescent and have a minimum display size of 190mm x 190mm.			
All lighted signage shall be provided with integral battery backup. Battery backup to have a minimum 1 Hour (One Hour) capacity.			
All signage is to be firmly fixed to walls or hung from ceilings with dual fixings of stranded wire cord.			
Portable Fire Extinguishers shall be hung on backing boards, firmly fixed to walls and structures in positions indicated.			
All equipment and peripheral components shall be new and shall carry a minimum of One Year's Warranty from the date of start up for commissioning and handover.			
All rates to include Materials, Labour, Transport, Handling and Overhead costs normally associated with the procurement, supply and installation of HVAC equipment and services			
Carried to Collection		R	
Bill No. 10			
Bill NO. 9 FIRE PROTECTION SERVICES			

**UPGRADING AND RENOVATIONS OF EXISTING FACILITIES
AT UNISA SOLOMON MAHLANGU BUILDING, PRETORIA, 0002
TENDER BILL OF QUANTITIES**

FIRE DOORS

Fire doors shall be Classified as indicated on drawings.
All fire doors shall comply to the specifications laid out and regulated by the application of SANS 10400-T.
Doors shall be fully shielded and be supplied and installed complete with Automatic Door Closers.
All fire doors must have door closers & must open with one movement - no lever handle with knob cylinder, no key, etc..
The class of door shall be identified by a label or inscription fixed or made to the frame of the door.

Fire door shall be installed - complete with rebated frames - into recessed porticos provided for this purpose. The leaves of the doors shall open in the direction of egress and shall not impede the evacuation of the building in the event of an emergency.

Class "B" Fire Doors

Supply and install door sets to provide 120 minutes stability, 60 minutes integrity and 60 minutes insulation.
Door sets to be tested and certified to comply in all respects to SANS 1253:2016.

Each door shall be installed with a minimum of three (3) heavy duty fire-rated brass or stainless steel hinges on each leaf.

Matching steel frames, made of 1.6mm thick pre-galvanised steel, complete with 30mm wide by 48mm deep rebates and complete with a minimum of five (5) fixing lugs of nominal size of 340mm x 30mm x 1.6mm to each side shall be provided to support the installation.

1	9.01 815 Wide x 2400mm High Class "B" Fire Doors	No	1
2	9.02 1000 Wide x 2030mm High Class "B" Fire Doors	No	5
3	9.03 1510 Wide x 2400mm High Class "B" Fire Doors	No	6

Fire Door Furniture

Supply and install push bar emergency locking systems to Class "B" Fire Doors as specified.

4	9.04 815mm Wide Single Leaf	No	1
5	9.05 1000mm Wide Single Leaf	No	5

Carried to Collection

Bill No. 10

Bill NO. 9 FIRE PROTECTION SERVICES

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**UPGRADING AND RENOVATIONS OF EXISTING FACILITIES
AT UNISA SOLOMON MAHLANGU BUILDING, PRETORIA, 0002
TENDER BILL OF QUANTITIES**

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**UPGRADING AND RENOVATIONS OF EXISTING FACILITIES
AT UNISA SOLOMON MAHLANGU BUILDING, PRETORIA, 0002
TENDER BILL OF QUANTITIES**

SECTION 3 : HVAC INSTALLATIONS

Bill NO. 9 FIRE PROTECTION SERVICES

COLLECTION

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Bill No. 10

Bill NO. 9 FIRE PROTECTION SERVICES

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**UPGRADING AND RENOVATIONS OF EXISTING FACILITIES
AT UNISA SOLOMON MAHLANGU BUILDING, PRETORIA, 0002
TENDER BILL OF QUANTITIES**

Bill No	SECTION SUMMARY - SECTION 3 : HVAC INSTALLATIONS	Page No	Amount
	Notes to Tenderers	106	
	Bill NO. 1 PRELIMINARY & GENERAL	110	
	Bill NO. 2 GROUND FLOOR HVAC SERVICES	119	
	Bill NO. 3 FIRST FLOOR HVAC SERVICES	126	
	Bill NO. 4 SECOND FLOOR HVAC SERVICES	133	
	BILL NO. 5 THIRD FLOOR HVAC SERVICES	140	
	Bill NO. 6 FOURTH FLOOR HVAC SERVICES	147	
	Bill NO. 7 FIFTH FLOOR HVAC SERVICES	155	
	Bill NO. 8 LIFTS & ELEVATORS	158	
	Bill NO. 9 FIRE PROTECTION SERVICES	162	
	Carried to Final Summary		R

**UPGRADING AND RENOVATIONS OF EXISTING FACILITIES
AT UNISA SOLOMON MAHLANGU BUILDING, PRETORIA, 0002
TENDER BILL OF QUANTITIES**

Item No	Unit	Quantity	Rate	Amount
<u>SECTION No. 4 - PROVISIONAL SUMS</u>				
<u>BILL NO. 1</u>				
<u>PROVISIONAL SUMS ETC</u>				
<u>PREAMBLES</u>				
For Preambles refer to"Department of Public Works: Specification Of Materials And Methods To Be Used - PW371"				
<u>SUPPLEMENTARY PREAMBLES</u>				
<u>Preambles</u>				
The Standard Preambles and the Notes in the various trade bills are to, and do, apply equally to this section.				
<u>Proprietary Products In Descriptions</u>				
Proprietary products shall be used as specified. Substitute products of similar quality and specification may only be used with prior approval by the Principal Agent				
Carried to Collection				R
Bill No. 1				
BILL NO.1 : PROVISIONAL AMOUNTS				

**UPGRADING AND RENOVATIONS OF EXISTING FACILITIES
AT UNISA SOLOMON MAHLANGU BUILDING, PRETORIA, 0002
TENDER BILL OF QUANTITIES**

General

Unless otherwise described, all prime cost amounts and provisional sums shall be nett. No provision for 5 percent cash discount shall be included for the main contractor.

Prime cost amounts and provisional sums exclude value added tax.

In the event of a prime cost amount or provisional sum being omitted the items "Allow for profit"... and "allow for attendance" applicable, shall be omitted together with the prime cost amount or provisional sum and no claim whatsoever will be entertained in this regard.

The principal agent shall be entitled to nominate or select any further specialist and other to execute work or supply and fix any goods whether or not a provisional sum is included in the bills of quantities and such specialists and other will then be deemed to be "selected subcontractors" as the case may be.

Profit

Where profit stated, the contractor may allow for profit if required

Attendance upon nominated/selected subcontractors

The item "Allow for attendance...." which follows each provisional sum for nominated/selected subcontractors work, shall be deemed to cover all the contractors costs incurred in providing free of charge to the subcontractor the service as set out in the relevant clause in the preliminaries

Taking delivery

Taking delivery of goods or articles by the contractor on site shall mean getting in, unpacking, checking that the quantity is correct and that the goods are complete and undamaged, submitting a report thereof to the interested parties and issuing vouchers for the receipt of such goods. The contractor is to store the goods and will be held responsible for the safety thereof and indemnify the employer against any damage or loss which may occur.

Carried to Collection

R

Bill No. 1

BILL NO.1 : PROVISIONAL AMOUNTS

**UPGRADING AND RENOVATIONS OF EXISTING FACILITIES
AT UNISA SOLOMON MAHLANGU BUILDING, PRETORIA, 0002
TENDER BILL OF QUANTITIES**

Works executed under a seperate/direct contract

The contractor shall permit access to the site and to the places where the work is to be carried out and provide every facility to enable the specialist to carry out his work in a workmanlike manner and in proper order and sequence.

Co-ordination

The contractor shall obtain all necessary particulars of the subcontractors work timeously and the contractor will be responsible for the programming and co-ordination of the works

Number of nominated/selected subcontractors

The contractors attention is drawn to the fact that the indicated individual provisional sums may consist of numerous specialist, all of which will become nominated/selected subcontractors. The contractor must therefore allow in his tender for any cost implication this may bring about, as no claims in this regard will be entertained

The Following Provisional Sub-Contract Amounts Are For Work To Be Carried Out By Either Main Contractor, Selected OR Nominated Sub-Contractors As it would Agreed Upon by Principal Agent.

SELECTED SUBCONTRACTS

The Following Provisional Sub-Contract Amounts Are For Work To Be Carried Out By Either Main Contractor OR Selected OR Nominated Sub-Contractors As it would Agreed Upon by Principal Agent.

CURTAIN WALL CLADDING

- | | |
|---|--|
| 1 | Provide the sum of 13 000 000.00 for the supply and installation of Curtain wall cladding. |
| 2 | Profit |
| 3 | Allow for general attendance |

Item

13,000,000.00

%

%

Carried to Collection

R

Bill No. 1
BILL NO.1 : PROVISIONAL AMOUNTS

**UPGRADING AND RENOVATIONS OF EXISTING FACILITIES
AT UNISA SOLOMON MAHLANGU BUILDING, PRETORIA, 0002
TENDER BILL OF QUANTITIES**

SIGNAGE INSTALLATIONS

1	Provide the sum of R500 000.00 for supply and installation of Signage installation works complete.	Item		500,000.00
2	Profit		%	
3	Allow for general attendance		%	

LIFT INSTALLATIONS

4	Provide the sum of 750 000.00 for the supply and installation of Lift, works complete.	Item		750,000.00
5	Profit		%	
6	Allow for general attendance		%	

BUDGETORY AMOUNTS

The Following Budgetory Amounts Are For Work To Be Carried Out By The Main Contractor, Nominated, Selected or Direct Contractors:

7	Provide the sum of R120 000.00 for Guardhouse.	Item		120,000.00
8	Provide the sum of R480 000.00 for Artwork.	Item		480,000.00
9	Provide the sum of R500 000.00 for Builders work in connection.	Item		500,000.00
	Provide the Sum of R4 500,000,00 for Contingencies to be deducted in part or all if not required.		R	4,500,000.00

Carried to Collection

R

Bill No. 1
BILL NO.1 : PROVISIONAL AMOUNTS

**UPGRADING AND RENOVATIONS OF EXISTING FACILITIES
AT UNISA SOLOMON MAHLANGU BUILDING, PRETORIA, 0002
TENDER BILL OF QUANTITIES**

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**UPGRADING AND RENOVATIONS OF EXISTING FACILITIES
AT UNISA SOLOMON MAHLANGU BUILDING, PRETORIA, 0002
TENDER BILL OF QUANTITIES**

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